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THE NATURALIST;

ILLUSTRATIVE OF THE

Animal, Vegetable, and Mineral Kingdoms,

(TO BE CONTINUED MONTHLY),

WITH

PORTRAITS AND MEMOIRS OF EMINENT LIVING NATURALISTS

AND ENGRAVINGS ON WOOD,

"Nothing can be unworthy of being investigated by MAN, which was thought worthy of being created by GOD."—BOYLE.

EDITED

BY NEVILLE WOOD, ESQ.

VOL. IV. OCTOBER, 1838—JUNE, 1839.

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TO

CHARLES WATERTON, ESQ.,

Of Walton Hall, in the West-Riding of Yorkshire,

Author of Wanderings in South-America, Essays on Natural History,

etc. etc. etc.,

A MAN ALIKE DISTINGUISHED IN PUBLIC AND IN PRIVATE LIFE,

AND WHOSE FAVOURABLE OPINION

"THE NATURALIST"

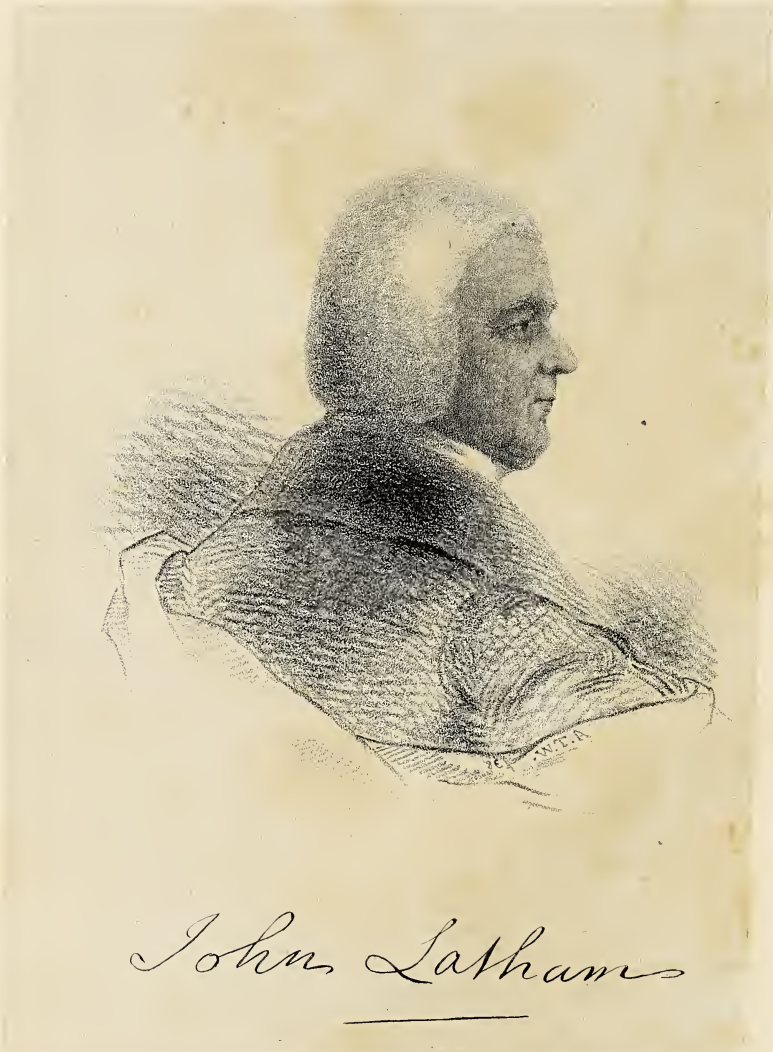
HAS BEEN FORTUNATE ENOUGH TO OBTAIN,

The Fourth Volume

IS INSCRIBED,

BY HIS SINCERE FRIEND AND ADMIRER,

THE EDITOR.



John Latham

Lithd. for Neville Wood's "Naturalist."

Day & Haghe Lith^rs to the Queen

49359

THE NATURALIST.

VOL. IV., NO. XXV.—OCTOBER, 1838.

HABITS OF THE ROUGH-TAILED STICKLEBACK (*Gasterosteus trachurus*, Cuv.) IN RUSSIA.

By Charles Drosier.

In the summer of the year 1836, at which time I was residing in Russia, a few versts from the capital, St. Petersburgh, I had an opportunity of observing the habits of that elegant little fish commonly called the Stanstickle or Prickleback, in a state of captivity; and never having met with a notice of the kind in any Journal of Natural History, or conversed with a person who had made this fish the subject of similar experiments, I have been led to suppose that the following paper may contain something that will be novel, at least to the generality of readers; but you must determine whether it is worthy of being incorporated with the interesting matter of your periodical. If it is, I beg you will make use of it.

I was situated at Alexandrasky, on the right bank of the Neva, as you ascend the river, about eight versts from the city. The country here is flat, but has all the rude appearance of a natural scene, though interlaced here and there with patches of cultivation; in one place may be seen many acres of the original labyrinthine forest standing, composed of Birch, Pine, Spruce Fir, Aspen, and a species of Willow, which forms thick underwood; in another of the same extent, that has yielded to the axe, the stumps of the trees having sprouted into a dense copse; then a track of cleared swampy pasturage, bordering perhaps upon a Moss bog, which in some parts is five miles across, fertile with Cranberries, the food of the Ptarmigan; but the cultivated spots are inconsiderable, and removed at distances from each other. A person wandering among the solitudes of these scenes could hardly persuade himself that he was in the neighbourhood of a magnificent city, did he not catch a glimpse, through some opening, of its many gilded minarets and glittering domes in the distance.

When the accumulated snow of winter is thawed by the approach of spring, the water quits the land by numerous channels, which ramify from the river in all directions—some of the upper branches of which are artificial dikes—and continues running, generally, till the latter part of June, when most of these channels

become dry, except a few large ones which remain water-proof, or sun proof, the whole of the year. Almost before the lingering fragments of porous ice have disappeared from the pools, the Stanstickles begin to push their way up from the river, till some of them attain the smallest drains, I suppose for the purpose of spawning. They do not leap over an obstacle like the Salmon and Trout, but ascend progressively, like Eels. I have watched a company of several dozen, side by side, screwing their way up a tiny cataract, whose glancing waters fell over an embankment of sods a foot high; no doubt they were assisted by holding on with their abdominal spines, which possibly may be the only use of those members. These little creatures were unconscious that they were going to certain death without being able to accomplish the object that prompted them to exertion; for they and their progeny perished when Dan Apollo, so celebrated for stealing "the poet's drop of ink," had purloined the sum total of their element with equal dexterity. It was curious to observe the daily decrease of the waters in most of their haunts, compelling them to take refuge in the deepest places, till eventually the different shoals were confined to detached holes or pools. The evaporating process continuing, their territories were abridged rapidly; at last they were reduced to almost as bad a state as our unfortunate countrymen in the black hole of Calcutta. Another enemy next appeared, in the shape of the Hooded Crow, who mercilessly forked them out to glut the insatiate maws of his young carnivorous brood in the adjoining wood.

I one day took a glass tumbler down to the drain which passed close to the house I was living in, and procured six fine specimens. I now convinced myself of what I had before suspected, viz., that there were two separate species in the habit of herding together, namely, the subject of the present paper (the Common Rough-tailed Stickleback, *Gasterosteus trachurus*) and the Ten-spined Stickleback (*G. pungitius*). I took these to the house, and put them in a large transparent glass jar, a foot high, and about six or seven inches wide, and filled it up with Neva water, which every one there uses for culinary, and indeed for most purposes, as the well and pond water is very impure. They seemed much frightened, and continued swimming up and down with great rapidity, darting instantly from the finger when put against the part of the glass nearest them. I left them on a table by a window; and on looking at them again two hours afterwards, I found all, with the exception of one, a Mackerel-shaped fish, in a state of great exhaustion, with their noses pushed out of the water, as it were, nearly in a vertical position, blowing like Grampusses. In a few minutes one tumbled to the bottom, lay on his side, and, as I could scarcely perceive his gills move, I thought he was dead; but to my surprise he roused himself suddenly, and darted up and down several times in a boisterous convulsive manner, and then subsided again to the bottom of the vessel. "There burst a noble heart,"

thought I; but no: another capriole—another and another, till, in the language of the newspapers, "he sank to rise no more, and untimely met his death in a watery grave." I did not give him "coroner's quest law," you may suppose, but ladled him out with a spoon, to prevent his tainting the water. Next morning I found the other four dead, and covered with a viscid opaque slime. I removed them: the survivor was in excellent health and spirits. I attribute the death of the five to the sudden transition from brook to river water; the first is of a reddish tint, impregnated with vegetable matter, which it gains by percolating through the morasses and forests; the latter is exquisitely bright, and of so strong a mineral character that new comers are disordered by drinking it. The fish that remained became naturalised to the water, which I changed every other day. In three or four days after he would rise and take small Flies which I put into his jar; and when these could not be conveniently obtained, a House Fly divided in six or seven pieces answered the purpose. His appetite was great, as he would eat eight or nine of these Flies a day. In a short time he became so tame that he would take them from the tip of the finger, and was not disturbed when the whole was introduced. When hungry he was restless; after meals he usually suspended himself in the middle of the jar, slowly fanning his pectoral fins, and would remain poised an hour or more, occasionally moving his eyes, or opening his mouth very wide, which might be, for aught I know to the contrary, expressive of *ennui*, or indigestion. He was in the gayest humour directly after the water was changed, and would then sport up and down with great velocity. The most curious thing I observed in this fish was the property it possessed of changing its colour. Since his residence in the jar he had become very transparent; at the end of a month he had a permanently roseate tint (I have seen specimens with it in the brooks), which he could deepen at pleasure to a very dark Salmon-colour, approaching crimson. I used to imagine that he threw out these colours when he was hungry; but I am not certain of the correctness of this. On other fish of his kind being introduced into the jar, he attacked them immediately, as interlopers, chased them up and down, caught them by the tail with his mouth, and glanced past them with his spines extended, assuming his deepest colour. The combined effect of the water and his hostility soon worried them out of their lives. Like the recluses of old, he hated the company of his fellow-creatures. No doubt he thought with Lord Byron—

> "There is society where none intrudes
> In the deep 'jar.'"

He lived about three months, and appeared in perfect health to the last. One morning I found him dead at the bottom of the jar, enveloped in slime.

Since the above was written, I have had an opportunity of referring to Mr. Yarrell's valuable *British Fishes*. I find that gentleman's account of the habits of

the Stickleback agrees with mine in many particulars, though I believe I have furnished you with something that may lay claim to a degree of novelty. Mr. Yarrell gives an observation of Pennant's, that these fish "are occasionally so numerous at Spalding, in Lincolnshire, that a man employed by a farmer to take them, has earned four shillings a day for a considerable time, by selling them for a halfpenny per bushel. From my own knowledge I can state, that they were once so plentiful in the neighbourhood of Lynn, Norfolk, before the drainage of that district was carried to its present extent, that boat-loads were conveyed along the coast and sold to the farmers, who used them advantageously for manuring lands: the supply is now exhausted. At Cambridge I have seen these two diminutive creatures afford the greatest amusement imaginable to the infantile anglers of the town, who may be seen every day on the Trumpington-road, in the summer months, equiped with tiny rods and lines, to which are sometimes attached enormously disproportionate floats, the size of many Sticklebacks, fishing with all the gravity and intense interest of Waltons, addressing each other with notes of admiration or disgust as the sport proceeds favourably or unfavourably. It is curious that these urchins do not use a hook, but tie a Worm to the line tight in the middle; and the fish are generally such tenacious biters that they allow themselves to be pulled out by the teeth; they are then strung upon a needle and thread, with which most of these "brothers of the angle" are provided.

Boughton, Norfolk,
June 13, 1838.

[Mr. Jenyns considers Cuvier's *Gasterosteus trachurus* to be a variety of the Three-spined Stickleback (*G. aculeatus*, Linn.). We beg to thank Mr. Drosier for his interesting notes. We well remember his brother, Mr. Richard Drosier, as a contributor to Loudon's *Magazine of Natural History*.—Ed.]

SINGULAR PHENOMENA CONNECTED WITH THE DEPOSITION OF MUD IN THE TAY.*

By George Buist, Esq.

Having had occasion to make some investigations in reference to the embanking and reclaiming of land from the river Tay, in Scotland, I was led to enter into inquiries relative to the mode in which the silt, of which the rich alluvial

* Communicated by Mr. Henry Buist.

soil is composed, comes to be precipitated from the waters of the river which held it in suspension. It is not necessary here to detail the methods pursued to accelerate the process of deposition and accumulation, or to notice the plans of embankment for defence or inclosure, or the modes of improving the value of the land recovered, farther than to state generally that the first part of the process consists in running out strong stone breakwaters, which occasion eddies or partial stagnations in the current, and then, when accumulations of mud have been obtained by the shelter of these, to plant Bullrushes, so as to obtain a more speedy enlargement and rapid accumulation of the earthy particles desired to be retained. Under these circumstances, one would naturally suppose that the chief periods of accumulation should be at seasons of biennial floods, and that during the spring and autumn freshes, when the Tay comes rolling down from the mountains, charged and rendered turbid with mud, then the largest deposits should occur; and again, that the periods most favourable for diurnal deposit would be when temporary stagnation in the waters of the rivers takes place at the turn of the tide, when precipitation would most readily occur if the waters were left in a state of temporary repose. Having mentioned these as my conclusions from theory, I was surprised to learn that they were the reverse of facts, and that, so far from the deposition of silt being most abundant when the river carried along with it the greatest quantity of earthy matter, then it was that no deposit whatever took place, the period of flood being that in which, instead of accumulation being obtained, much that had previously taken place was apt to be swept away. As to the bi-diurnal tidal deposit, my opinions were equally unsupported by fact; as low water approached, no precipitation whatever was perceptible; nor, generally speaking, could any be observed after the tide had begun to recede. The most favourable seasons for deposit were those in which the river was moderately full and clear, without turbidity or flood; and the best time of the day was just after the turn of and during the rising tide. So strikingly anomalous did these statements appear to be, that, though made by one of the most experienced, observant, and intelligent farmers, who had long been engaged in embanking, I somewhat doubted his accuracy, until, after a most minute and laborious inquiry, I had them corroborated in every particular by all who had had any opportunity of observing the matter. So greatly, in reality, had the farmers been struck with the fact, that a general belief obtained that no deposit whatever was obtained directly from the waters of the river; and that the mud which had accumulated from four to eight feet thick within the last twenty years, over hundreds of acres of land, now in cultivation, was wholly an oceanic production. The following, among other facts, evolved themselves in the course of these inquiries.

Shortly after the turn of tide, when the current of ebb begins to set outward,

a remarkable clearness and transparency takes place in the colour of the water; all muddiness disappears, and the bottom may be distinctly seen at depths far beyond those at which it could a few hours before be observed. This is the period selected for bathing by amateurs, who have noticed and are aware of these facts. At this time, as may be supposed, the salt part of the tide is strongest, being the true oceanic tide, which insinuates itself like a wedge beneath the ponded fresh-water, which it elevates on the surface,* just beginning to mingle with the fresh water of the river, as both flow towards the sea. On the more rapid rush of waters taking place towards half-tide, when the sand-banks begin to appear above the surface, a slight degree of turbidity ensues, chiefly near the bottom, the surface remaining pure and transparent. Immediately on the turn of the tide from ebb to flood, appearances become entirely altered. The surface of the advancing waters cease, on the side setting up the river, to be transparent as formerly, but appear covered over with films of some opaque or oleaginous matter. So uniformly and universally had this become matter of observation, that I found that around Dundee the school-boys, who amused themselves by fishing or wading about the mud banks at low water, took the discoloration as the first evidence of the turn of the tide, and the signal to retreat before an increase of depth sufficient to occasion alarm could be observed. Nor was this confined to Dundee, or the debouchure of the river, or its confines; as high as the salt water ascended the same phenomena took place, and continued through the periods of flood. Now it was that the deposit of silt occurred, and that a tumbler full of water in this condition, exhibited precipitation, the earthy matter falling to the bottom not as a uniform precipitate, but in thin, floccular, minute flakes of discoloured snow. As the tide approaches flood, and begins to fall away again, the same appearances as above-described once more ensue, and the water purifies itself as the tide falls back, till a rise exhibits it defiled on the surface as before.

The idea that the muddy sediment was an oceanic and not a fluviatile deposit, seemed extraordinary; yet supported by so many appearances, that on examining the water, the following theory seemed to reconcile all difficulties without any striking or strained hypothesis.

The estuary of the Tay, for a space of twenty miles in length above the sea, and from one to four in breadth, abounds with banks of sharp silicious Sand, which become dry about half tide. These are perfectly permeable, and charged at all times with water, as may be seen when a hole is dug below the level of the tide, which is immediately filled. Their texture is such, however, that

* See Dr. FLEMING on Salt and Fresh-water tides in the Tay, in *Philosophical Transactions*, Vol. VIII., 1818.

though pure water may percolate through them, that which contains muddy particles will sustain a purifying filtration, leaving all its contaminating matter at or very near the surface of the Sand-bank. The waters of the river Tay when foul carry along with them nearly $\frac{1}{1,000}$th part of their weight of mud, and at all times probably $\frac{1}{3,000}$th part. As the tide recedes, a free current of these will pass through the Sand-banks, which will then become covered with a fine film of silt, which, if left to the operation of precipitation by gravitation only, would most likely have been carried far out into the bosom of the ocean. The Sand-banks, being left dry for several hours every day, will leave the film thus accumulated to be acted on by the sun and air, so as to acquire a degree of consistency, which will make it rather tend to float away in a flocculent form on the next rise of the tide, than to mix with its waters diffused in the form it formerly assumed. In this case, if we suppose the process to be reversed, and the defiltrated tide that had previously descended through the emerging Sand-bank to rise through, the film will be floated upwards and onwards, and will most likely manifest the appearance formerly described. Besides this chief anomaly, several other difficulties are solved by this assumption. We see why no deposit of mud should take place above high-water-mark. Though there the river appears, and must necessarily be, most turbid, the mud is diffused through it in such impalpable particles, there is so great a state of agitation and onward motion, that they refuse to precipitate themselves. We can in this case show why no deposit takes place during the downward flow of the stream; the mud is still too much diffused, till filtration gives it something like consistency of form. By this means we see at once how it should not be uniformly and imperceptibly precipitated, as we should at first sight expect, but falls in flakes to the bottom; likewise, why wet weather and floods are unfavourable to deposition, the stream being sufficient either to sweep the banks of the filmy sheathing, or the rains which produce or accompany river freshes, being sure to keep the Sand-banks so wet as to prevent sufficient desiccation to produce coherent films. This latter reason also accounts for the greater abundance of deposition in summer, when we should expect river water to be comparatively free from earthy matter, as compared with autumn, when we know it to be foul with it. It points out also why such rivers as the Tay, the Humber, and the Thames, where estuaries abound with Sand-banks, should be particularly favourable for the collection of mud for embanking, warping, and in the formation of alluvial marshes, compared with others, which, bearing an equal quantity of mud alone, carry it out without detention far into the sea.

Cupar, Fifeshire,
Aug. 2, 1838.

ON THE ABUSE OF PRINTS IN WORKS ON NATURAL HISTORY.

By Peter Rylands, Esq.

"When Doctors disagree, who shall decide?" is a query long known, and often asked; and although neither Mr. Lees nor myself have any claim to that title around which is associated a halo of erudition, yet a student reading our respective articles might fairly repeat the inquiry. Whilst one self-constituted teacher strongly reprobates the system of using plates and other *easy* methods of obtaining a knowledge of specific appellations, the other as decidedly recommends them. Perhaps, however, Mr. L.'s views and my own may be less conflicting than first appearances might lead us to suppose. I readily admit, that for a certain class who require *enticing*, whose ardour would fail before even slight obstacles, and whose time or inclination will not admit of a long and devoted course of study, it is necessary that an "easy road" should, if possible, be provided. Nor is this class small. It includes, perhaps, the majority of those persons whom we continually hear "admiring Nature," extolling the wonderful structure of an insect, or the opening beauties of a flower; and yet who have no *true* interest in these objects, or manifest no *real* desire to discover more of Nature's excellencies. They talk much, but feel little. Now, it is highly possible that in some of these individuals a strong interest might be excited: and to do this every facility ought to be given to aid their acquisition of knowledge; as with the increase of knowledge will the desire of knowing more be strengthened.

But we find others whose love of Nature will not allow contentment with a slight and superficial acquaintance with her works; and whose fixed purpose it is to attain, if possible, a proficiency in their study. These are, in fact, the true students of Natural History. The difference between the two classes may result, as it probably does, from the relative development of the perceptive faculties.

If Mr. Lees applies his remarks to this as well as to the former class, we are certainly at issue; and notwithstanding the deference I am always willing to pay to the observations of my "elders and betters" in the science (and it is no humility in me to say that Mr. Lees is one), I must beg to offer some reasons for dissenting from his opinions.

First, then, to divest the subject of any erroneous associations, I must object to Mr. L.'s closing simile (Vol. III., p. 301), which does not, in my opinion, exactly meet the case. If instead of the ascension of a mountain, he had selected a journey performed by one traveller on foot, and the other by railway, his image would have been more applicable. Both arrive at the same destination; though the former requires hours for its attainment, and the latter only minutes. But which learns the most? which sees the most of the country? whose experience

is the most valuable? I have heard, however, of graphic descriptions of towns written by a traveller whose only observations were made whilst being whirled through in a post-chaise at midnight! And you and I, Mr. Editor, have heard of naturalists (so-called) who being supplied with names to their skins of birds, fishes, &c., have (without any further trouble or investigation) written *learned* disquisitions on the habits and classification of the animal kingdom. The former may be considered an exception to the simile of the travellers, and the latter fact equally strong against the case I am about to submit to your readers.

Mr. Lees remarks that "many naturalists seem strongly to object to the name of a species being discovered by the student in an 'easy way,' as if a person was not more likely to pay attention to the minutiæ of an object whose name he was certain of, rather than to direct his attention to what he was entirely unacquainted with." (Vol. III., p. 298.) My experience leads me to agree with the "many naturalists" here referred to, and to object to Mr. L.'s conclusion. In all the instances which have come under my notice, those students who have had their specimens named by *kind friends*, although they have admired the *tout ensemble* of the species, seldom trouble themselves with the details; and as unfrequently have they any clear perception of differences, or substantial knowledge of classification. Whilst, on the contrary, the student who relies upon descriptions for the determination of species, is far more likely—in fact is compelled—to "pay attention to the minutiæ" of the object whose name he seeks. And in doing this, there is a fourfold advantage: the peculiarities of the structure are impressed on the mind; the terms used in describing them are made familiar; the *relations* of the species to others are investigated (hence a thorough knowledge of classification); and lastly, the perceptive faculties, and with them a tact for observation and an appreciation of differences, are strengthened. These are far from being despicable advantages, and they may readily be shewn to be the natural results of the system I am advocating. When a student, for instance, takes up an insect for examination, previous to arriving at the specific descriptions, every organ used in classification has to be carefully noted; and in most cases he will find it advantageous, and even necessary, to compare the insect under examination with allied species. Nor is this course one of bare unmitigated toil, as a student might suppose from Mr. Lees' remarks. A considerable amount of pleasure accompanies such an investigation. Peculiarities of structure (unobserved by the dependent upon plates, or obliging friends) delight while they instruct the investigator: the pleasure resulting, undoubtedly, from the gratification of the perceptive faculties, which being healthfully exercised cannot afford sensations other than agreeable. And when the process is over, the name discovered, and the species determined, there is a calm philosophic pleasure (to say nothing of the

knowledge gained during the inquiry) concomitant with a consciousness of having arrived at our object without empiricism which is far from unenviable.

It would be no objection to the above if Mr. Swainson's remark (quoted by Mr. Lees, Vol. III., p. 298) were correct, as it would only prove that some works, the absence of which Mr. S. laments, should be provided. Mr. Swainson observes that, "in the present paucity of good *elementary* books," if an entomological student "succeeds so far as to ascertain the genus of his insect, he may consider himself very fortunate." I am at a loss to know what Mr. S. means here by "elementary" works, as treatises to which I should apply that epithet are tolerably numerous; and if their number were doubled, they would scarcely enable the student to discover the *specific* names of his insects. But perhaps Mr. Swainson terms such works as those of Stephens, Curtis, &c., elementary. And if so, it does not materially affect the case, as from the first alone, I feel convinced that a student, provided he had duly acquired the *elements* from Kirby, &c., would readily discover the names of the majority of his specimens.* But a work containing good specific descriptions, and published *periodically at a price within the reach of our poorer brethren*, is certainly much needed. Mr. Westwood proposes supplying this desideratum if the success of his *Introduction*, now publishing, equals his anticipations; and I trust that with some this fact, added to the real merit of the *Introduction*, will afford a sufficient inducement for subscribing to the work.†

Bewsey House, Warrington,
July 24, 1838.

* I ought perhaps to except a great portion, especially of the *smaller Lepidoptera*; which I am afraid no descriptions, however good, would enable the student to distinguish. Plates are perhaps here necessary, as words can hardly describe accurately colours so variously and intricately blended. But descriptions *might* accomplish much if written with the pen of a master; and it may also be remarked that plates are far less likely to do harm in this than in the other orders.

† The reader, I have little doubt, understands, that in the above letter, I do not at all wish to abolish plates of *dissections*, &c., illustrative of the characters of the families, orders, &c., which I think not only useful but necessary.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part XVII.

By Neville Wood, Esq.

(Continued from Vol. III., p. 432.)

An adult, natural size, of the well-known Wood Snipe (or "Woodcock" of sportsmen), *Scolopax rusticola*,—Bécasse ordinaire, *Fr.*—Wald Schnepfe, *G.*—well figured. Mr. Gould is of opinion that several species now included in the Snipe genus—and amongst others that under consideration—ought to form a new generic group, but our author has not himself ventured on the alteration. In Europe the Wood Snipe is only or chiefly known as a migratory bird, but of late years we have frequently heard of its remaining to breed with us. We think it probable that a few of these birds have always hatched and reared their young in Britain, and that the extensive drainage of land of almost every character now going on, will not cause any diminution in their numbers. Neither, again, do the active exertions of the sportsman and the poacher, during "the season," appear to effect any scarcity of the species. Being, for the most part, a winter visitant in the temperate portions of Europe, it passes its summer within the arctic circle, but is confined to the old world, and is extensively dispersed over Europe and Asia.

Red-headed Pochard,—*Fuligula ferina*,—Anatra Penelope, *It.*—Tafel Ente, *G.*—This is in every respect an exquisite plate, containing representations of the male and female, rather less than the size of life. Common throughout Europe, Asia, and, says Mr. Gould, a portion of Africa. It is taken in considerable numbers in this country in decoys, and sent to the London markets. It is a truly aquatic species, and subsists on molluscs of various kinds. Breeds in marshes, laying about twelve white eggs. The tints of the female are more obscure than those of the other sex.

Bartram's Sandpiper, *Totanus Bartramia*,—Chevalier à-longue-queue, *Fr.*—Langgeschwanzte Strandlaüfer, *G.*—The figure—of an adult male, natural size—is accurate, but somewhat wanting in effect. In Europe this bird occurs very rarely, in Britain never, America being its true habitat. Feeds on insects. According to Alexander Wilson—to whose pages our author has had recourse in his present description—Bartram's Sandpiper does not frequent the sea-shore, and therefore we are a little surprised at the "back-ground" (if it be not Irish so to designate the *water* in the plate before us) given by Mr. Gould. "They run," says Wilson, "with great rapidity, sometimes spreading their tail and dropping their wings, as birds do who wish to decoy you from their nest: when they alight

they remain fixed, stand very erect, and utter two or three sharp whistling notes as they mount to fly." "Unlike most of their tribe," observes the same author, "these birds appear to prefer running about among the Grass, feeding on Beetles and other winged insects. There were three or four in company; they seemed extremely watchful, silent, and shy, so that it was always with extreme difficulty I could approach them.....The male and female are nearly alike."

Hedge Dunnock, *Accentor modularis*,—Accenteur mouchet, *Fr.*—A male and female, natural size. They are too finely executed to be entirely characteristic, and the bills are not exactly those of the Hedge Dunnock. But we have, on the whole, no reason to complain of the plate. It is extensively known as the "Hedge Sparrow." Inhabits nearly the whole of Central Europe, and is so familiar to our readers as not to require a detailed description.

Wood Grous, *Tetrao urogallus*,—Tétras auerhan, *Fr.*—Auer Waldhuhn, *G.*—A male and female, two-thirds of the natural size. The plate is good, but it might have pleased us better had we not previously seen some still finer representations of the species. The Wood Grous, exclusive of its beauty, has peculiar interest in the estimation of the British ornithologist—not, however, either on account of its abundance or scarcity, but because, having once been common in many parts of this country, not a single specimen has now been met with for upwards of half a century. The diminution of their numbers was of course gradual. Our epicures continue to feast on this bird as formerly; but the supply is now furnished by Scandinavia, where, as well as in the Pine-forests of other mountainous portions of Europe, it abounds. This bird is more arboreal than the typical Grous, and its feet are furnished with horny papillæ, which enable them to perch with ease on smooth surfaces. It is polygamous. "As the breeding-season approaches, the male becomes greatly excited, and, perched on some large branch, in a dense part of the forest, invites his mate by often-repeated and loud calls, which very frequently lead to his own destruction, by apprising the sportsman of the immediate locality in which he is seated: hence in the months of April and May the London markets are frequently stocked with fine males in their highest state of plumage, and with a favourable wind for the Lobster-boats, which are the general means of conveyance, arrive in good order.....The female rears her young in independent seclusion: the nest is placed amidst breakers and dense underwood; the eggs are from eight to sixteen in number, of a yellowish white spotted with darker yellow." Feeds on Alpine berries, tops of Fir, Snails, &c. The male is considerably larger than the female, and his plumage consists of rich brown and glossy green variously disposed, while the other sex is of a lighter and more sober colour. The male, in full plumage, is a fine subject for the ornithological painter.

Buff-breasted Tringa, *Tringa rufescens*,—Tringa roussâtre, *Fr.*—A pair of

these birds, in adult plumage and "of the natural bigness," are sweetly and correctly pourtrayed. The discovery of this bird in Britain is due to Mr. YARRELL, the first specimen having been taken in 1826. It has only thrice been met with in Europe; but, although unknown to WILSON, it appears to be common in many parts of America. It seems probable, from a circumstance related in Mr. GOULD's letter-press, that the bird breeds near the arctic circle. "From its having been found in Louisiana, NUTTALL infers that, coursing along the shores of the Mississippi, and thus penetrating inland, it probably proceeds by this route, as well as by that of the sea-coast, to its northern destination to breed." Feeds on land and marine insects, especially Grasshoppers. The female, according to AUDUBON, is larger than the male, and is of a somewhat lighter colour. The young birds are said to be much lighter and more spotted.

SHORT-TOED CIRCAETUS, *Circaëtus brachydactylus*,—Aigle jean-le-blanc, *Fr.*—Kurtzzehiger Adler, *G.*—LEAR has executed this plate—representing an immature bird, one-third less than the natural size—with his accustomed beauty and fidelity. The true situation of this bird in the system is obvious to the ornithologist even on a cursory inspection. Inhabits Germany, Swisserland, Africa, and India, occurring occasionally in France. Feeds on Snakes, reptiles, &c. The female has less white than the male, and the head, neck, and breast are more thickly blotched. The young have the upper parts of a deep brown, with the base of each feather pure white. For a minute description of the plumage, see TEMMINCK's *Manuel d' Ornithologie.*

BIMACULATED TEAL, *Querquedula glocitans*, VIGORS.—Of the habits of this extremely rare bird little or nothing is known. One or two specimens have been taken in Britain, but Mr. GOULD is not aware of the existence of male and female examples in any collection except those in the museum of the Zoological Society, to which they were presented by N. A. VIGORS, Esq., M.P., D.C.L.—The sexual differences are of the same character as in the Common Teal, but we may observe that the female has the head and neck covered with minute black spots. The plate contains a male and female, natural size. The former is a beautiful bird, and both are extremely well executed.

REDLEGGED PARTRIDGE, *Perdix rubra*, RAY,—Perdrix rouge, *Fr.*—Pernice commune, *It.*—Rothe Feldhuhn, *G.*—This bird is seldom successfully delineated, and the representation before us, of a male, natural size, is scarcely in Mr. GOULD's best style. As our author retains this species in *Perdix*, he fails to "practise what he preaches." It is confined to the continent and the isles of Jersey and Guernsey. It is sometimes called the "Guernsey Partridge." In England it is an introduced species, and is common in many parts of the country, especially in the eastern counties. It is more shy and wary than the Grey or

Common Partridge, but is without difficulty preserved on private estates, where it is extremely ornamental. The female lays from fifteen to eighteen eggs, orange yellow, freckled all over with red. "The young before the second moult have their plumage striated somewhat after the manner of the young of the Common species, but by the end of October this colouring is exchanged for the transversely-marked plumage of the adult: the old birds of both sexes are so nearly alike in the colouring and markings, that were it not for the blunt spur, which always forms an appendage to the male, it would be difficult to distinguish them." We may observe that the Redlegged Partridge is considerably more ornamental than the Common Partridge, but that its flesh is inferior. It is further said that the latter disappears wherever the other is introduced,—with what truth we know not.

Speckled Kingfisher, *Alcedo rudis*,—Martinpêcheur pie, *Fr.*—The plate figures, very beautifully, a pair of these birds, natural size. To those who are only acquainted with our own brilliant-plumaged Kingfisher, the species under consideration would scarcely appear like a member of the same genus. Inhabits Asia and Africa, being abundant "on the banks of the Nile and the other rivers of Egypt, as also those of Syria and the adjacent countries;" it has likewise lately been discovered in the islands of the Grecian Archipelago. Nothing further is recorded of its economy than that it feeds on fishes, and lays white eggs. The female and young have only one black band on the breast, while the male has two.

Common Flamingo, *Phœnicopterus ruber*,—Flammant, *Fr.*—An adult and a young bird, half the living size, are given, in an admirable manner. Both figures are in the most finished style, but at the same time bold and natural. The plate is by Lear. It is not certain whether this species occurs in America; if it does, it is met with in all the warmer parts of the continents of Europe, Asia, Africa, and America. It frequents marshy and watery places, wading a considerable distance from the land in search of food, which its singularly long neck and legs enable it easily to do. It subsists on molluscs, the fry of fish, &c. In collecting food the upper mandible is placed downwards, as partially represented in one of the figures in the plate. It lives in small flocks, is very shy, and flies rapidly, "the troop assuming a wedge-shaped form." "Temminck states that it erects among the morasses an elevated mound of mud and earth, on the top of which, in a slight depression, the female deposits her eggs, placing herself astride to cover them, the great length of her limbs precluding the possibility of her assuming the usual position: the eggs are said to be two in number, of an oblong form and of a pure white." The young before the first moult are grey: as they approach maturity they gradually assume the scarlet and white livery. They are four years in attaining their "majority." The sexes are

similar in plumage, but the male is larger than his mate. Mr. GOULD believes that seasonal changes take place in the species, the rose colour being, according to him, characteristic of the spring and summer.

GREAT SNIPE, *Scolopax major*,—Grande Bécassine, *Fr.*—Beccacino maggiore, *It.*—Mittel Schnepfe, *G.*—A very fair figure of an adult male, living dimensions. Mr. GOULD comments very justly on the inappropriateness of such names as *major*, *minor*, *minuta*, &c., and although these terms cannot be altered where they already exist, yet we trust such defects will not in future creep in. Occurs in Britain, but is most abundant in the north of Europe. It migrates singly or in pairs, and from its unsociable disposition has received the name of "Solitary Snipe." The Great Snipe is very similar to the Common Snipe, but may be distinguished with a little care, especially by comparing the two species. "Its flight is less tortuous and rapid than that of the Common Snipe, being performed in a more steady and even line." In food, haunts, habits, nidification, &c., it resembles the Common Snipe.

SOLAN GANNET, *Sula Bassana*,—Fou blanc, *Fr.*—Weisser Tolpel, *G.*—Another of LEAR's bold and admirable productions. Such a plate as that now lying open beside us, is perhaps only to be met with in GOULD's *Birds of Europe*. It contains an adult bird and one of the first year, three-fourths of the natural size. "The seas bordering the European shores are the natural habitat of the Solan Gannet." Although a bird of rather local distribution—on account of the nature of its haunts—yet as its habits are extremely interesting, they have very frequently been given to the world in various shapes; and therefore, especially as it would absorb several pages to go minutely or satisfactorily into the matter, we shall proceed with our analysis by passing to the next species figured in Mr. GOULD's work.

BROAD-BILLED TRINGA, *Tringa platyrhyncha*,—Bécasseau platyrhinque, *Fr.*—One figure is given, of the natural dimensions, which are not very large. Inhabits the high northern regions, passing annually southwards along the rivers of the eastern part of the Continent. It is somewhat rare, and little is known of its habits. It undergoes a seasonal change of plumage. The sexes are similar. "Our plate represents it in its autumnal livery, when the red markings of the upper surface have disappeared, in consequence of the edges of the feathers wearing away, while at the same time the rufous tint which covers the eye-streak and the face has given place to a dirty white."

CALANDRA LARK, *Alauda Calandra*,—Alouette Calandra, *Fr.*—Kalander Lerche, *G.*—An adult male and a young bird of the year are figured. Its range "extends nearly to the tropics: it is very abundant in Northern Africa, and is common in Spain, Turkey, Italy, and the south of France, to the north of which

countries it is seldom seen." Places its nest amongst herbage, laying four or five clear purple eggs, with large grey spots. Feeds on insects, seeds, &c. The female is smaller than the male, and young birds have each feather tipped with yellowish-grey.

Brent Goose, *Anser brenta*,—Oie cravant, *Fr.*—Anatra colombaccio, *It.*—Ringel Gans, *G.*—An adult male figures in the plate, somewhat under the living size. Although a sombre subject, Mr. Lear has executed the plate in the most praiseworthy manner, though only in his usual masterly style. With us this Goose—the smallest European species—is a winter visitant; and it appears to be met with in all the maritime portions of Europe, Asia, and America. During the whole month of October we have fresh additions of their numbers to our shores, and especially, according to Selby, to those of Northumberland. The same author states that it feeds entirely on marine vegetables, the fronds of different *Algæ*, particularly of one which seems to be *Ulva latissima*, mixed with a considerable quantity of sharp sand. When feeding or flying they make a loud and incessant cackling, probably much after the fashion of the Canada Goose, *Anser Canadensis*. The Brent Goose is extremely shy, and it therefore requires considerable skill to come within gun-shot of the flock. It breeds in northern latitudes, making a nest of herbage, and laying ten or twelve white eggs. The female differs from the male in being a trifle smaller.

Temminck's Tringa, *Tringa Temminckii*,—Bécasseau Temmia, *Fr.*—Temminckischer Strandlaufer, *G.*—An adult and a young bird are presented, of their natural size. The former is a lovely figure, but the attitude of the latter is too stiff to resemble Nature. Here again we discover the error previous naturalists have committed in naming species from their relative size, &c.; for Temminck's Tringa is mainly distinguished from *Tringa minuta* by its smaller dimensions and shorter tarsi! Occurs on the lakes, rivers, and shores of Europe, North Africa, and Asia. It is common in similar localities in Britain in spring and autumn, but is not known to breed with us, although Mr. Gould thinks that it probably hatches and rears its young in some secluded parts of the country. Subsists on insects, Worms, and molluscs. The female is rather larger than the male, but is otherwise similar. The summer plumage is much darker than that of winter, and in young birds each feather is marked with semilunar edgings of black and grey.

Little Cormorant, *Cormoranus pygmæus*,—Cormoran pygmée, *Fr.*—A male, natural size, undergoing the change from winter to summer, of this singular-looking creature, is well figured. "Although termed *pigmæus*, it is very far from being the least of its genus. Common in the east of Europe, especially along the borders of the lower Danube. It is abundant in Asiatic Russia, but has never occurred

in Britain. Of its habits we have no information. In its changes of plumage it strictly resembles the Common Cormorant, and it is probable, thinks our author, that both sexes participate in these changes.

Richard's Lavrock, *Corydalla Richardi*, Vig.,—Pipit Richard, *Fr.*—The north and west of Africa "probably constitute the true habitat" of this bird. Although a few specimens are taken in Britain almost every year, it is everywhere extremely rare in Europe—in fact a mere straggler. "In its actions it displays all the activity and alertness of the other members of the genus, among which it will rank as the largest and one of the most typical;* it never perches on trees, but is always seen on the ground, where it runs with the greatest rapidity in pursuit of its food," which consists of various insects. Nidification unknown. The sexes are similar, and no seasonal changes of plumage take place. A male is beautifully figured in the plate, of the natural size.

Glaucous Gull, *Larus glaucus*,—Goëland Burgermeister, *Fr.*—Weissschwingige Meve, *G.*—Splendid figures of an adult male in summer plumage and a young bird, two-thirds of the living size. Distinguished from *L. marinus* by the delicate grey colouring of its mantle and upper surface. The majority of individuals frequenting our coast are young birds, the latter having "a more decided propensity to wander far from their native habitat." It is a native of the ice-bound seas of the northern regions, but passes southward in autumn, taking the British islands in its way. Builds on rocks, laying purplish-grey eggs spotted with amber brown. Feeds on fish, carrion, sea-birds, &c. Its habits resemble those of the other larger Gulls, but its flight is said to be more buoyant. Young birds are of a dirty brown colour, barred with darker brown; adults are for the most part pure white in summer. In winter the head and neck are streaked with pale brown.

Campsall Hall, Aug. 23, 1838.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from Vol. III., p. 475.)

Arenaria.—From *arena*, sand; on account of their growing in sandy places. *Arenaria marina*, Sea Spurrey, Sandwort.—It is succulent, very much re-

* By some authors the largest members of the genus are usually considered as most typical—a mode of procedure of which we certainly cannot approve. So far from the present species being a *typical* Pipit, we are of opinion that it should form a new genus, as effected some years since by Dr. Vigors, M.P.

sembles Samphire, and considerable quantities of it are pickled and sold for that plant.

Arenaria peploides, Sea Chickweed or Sandwort.—Peculiar to the sandy shores of the sea, but there found in abundance. Its juices partake of the alkaline nature of other succulent maritime plants. In Yorkshire it is frequently used as a pickle.

Arenaria tenuifolia, Fine-leaved Sandwort.—The flowers are very small and inconspicuous, rarely expanding but in bright sunshine, and are soon past. It is a little plant of insignificant appearance, whose use either to mankind or the brute creation is hitherto unknown.

Arenaria verna, Vernal Sandwort.—It has been remarked by the Rev. J. Pike Jones, in his *Botanical Tour*, that this plant has the peculiar power of resisting the deleterious effect of the metallic oxides which pervade the refuse heaps thrown out from mines, and is found to flourish in such situations, usually destructive to vegetable life.

Aristolochia.—Αριστολοχεια, from αριστος, good, and λοχεια, parturition, on account of its medicinal qualities.

Aristolochia clematitis, Birth-wort.—The anthers being situated under the stigma, could scarcely fulfil their function without extraneous assistance. The little insect being entangled in the hairy tube of the blossom, in its efforts to escape, performs the important office of anointing the stigma with the pollen. And thus in other instances, as Cowper remarks,

> ———"When summer shines,
> The Bee transports the fertilizing meal
> From flower to flower, and even the breathing air
> Wafts the rich prize to its appointed use."

The root is aromatic and bitter, but not ungrateful to the palate. It has been used in the Portland powder for the cure of the gout, but not without producing effects more formidable than the original disease. As a warm stimulating medicine it still retains a place in some Pharmacopœias. By the ancients great virtues were attributed to it, as appears from Dioscorides, Galen, and Pliny. An opinion is said to prevail in France, that the produce of vineyards in which this plant abounds becomes deteriorated in quality.

Arrhenatherum.—Named from αρρην, male, and αθηρ, an awn.

Arrhenatherum avenaceum, Common Oat-like Grass.—Cows, Sheep, and Goats eat it. It affords a large coarse crop, but is unpalatable to cattle, especially to Horses. It is excessively bitter. A variety with knobby roots (*Gramen caninum nodosum* of Gerard) is a most noxious weed in arable lands; particularly on parts of the coast in Hampshire; and by its introduction into the island of St. Kitt's, a district has been rendered useless. To eradicate the bulbous-rooted

Oat-grass requires as much fallowing as the Common Couch. Wherever it prevails, as in the North of England and East Lothian, it should be carefully rooted out, even by paring, and burning in clayey arable soils; for, being strong and cumbersome, it is capable of contending with any crop. It appears that if this Grass be entitled to any place in permanent pasture, it should be a very limited proportion. The whole plant is often affected by the disease termed "rust." Nevertheless, the animated description of Miss KENT confers no inconsiderable degree of interest even on this plant. "I have seen it," observes that elegant writer, "six feet high, with leaves two feet long, and more than one inch wide; with its panicle of flowers gently drooping to one side, at least one foot six inches in length, and so finely polished, that, but for their green colour, we might think it was composed of silver Oats. Yet it is not green, neither is it white, nor gold colour, nor purple, but it is a union of all these: it is the offspring of silver and of gold, of the amethyst and the emerald. It is, indeed, very variable; but, in the full pride of its beauty, this Grass is truly magnificent. The light purple pyramids that quiver in every field and meadow, must be well known to every reader. In fine, the student who has time to investigate their beauties, will find the family of Grasses peculiarly interesting, and much more various and beautiful than from the apparent homeliness of many they might be supposed to be."

Artemisia.—Αρτεμισια, from a queen of that name, who first used it; or from Αρτεμις, a name of DIANA.

Artemisia absinthium, Common Wormwood.—This plant is a powerful bitter, much extolled by HALLER, on various authorities, as a stomachic, and recommended by him for keeping off fits of the gout, for which it is said to have served the Emperor CHARLES V. The plant is thought to drive away insects from clothes and furniture, for which purpose it is often laid in drawers and chests in the country. The vegetable alkali of the shops has been usually procured from this herb, and called "Salt of Wormwood," though retaining none of its peculiar qualities. It gives a bitterness to the flesh of Sheep that eat it. Horses and Goats dislike it; Cows and Swine refuse it. *Livia Absinthii* and the rare and singularly-elegant Plum-moth, *Pterophorus spilodactylus*, CURT., pl. 161, are found upon it. Turkeys are fond of it. This is one of those domestic plants which, associated with Mallow, Mugwort, Hemlock, Docks, &c., would seem to follow the footsteps of Man, thriving amidst dust and rubbish, and to be found wherever a few miserable hovels are erected. RAMOND and DE CANDOLLE observed several of these species among the ruins of cottages where shepherds had once lived, high on the Pyrenees; and some years since I remarked, says Mr. WINCH, the same circumstance in the Highlands of Scotland. "The constant appearance of these weeds about towns and villages is a curious and inexplicable

phenomenon, for no one ever cultivated such plants for utility, much less for ornament."

Artemisia maritima, Sea Southernwood or Wormwood.—In its wild state it smells like maram or camphor, but in our gardens is less grateful, though still much more so than the former species. It is used as an ingredient in distilled waters, and beat with thrice its weight of fine sugar is formed into a conserve. Its virtues are the same with those of the last species, but in a weaker degree. Horses eat it; Cows, Goats, and Sheep eat it. THRELKELD informs us that in Ireland the country people make it into sheaves, and bring it in cars out of the adjacent counties of Meath and Lowth to Dublin, "of which alehouse-keepers make their purl, great consumption of which is made in winter mornings."

Arum.—Αρον. LOBELIUS derives it *quasi* ιερον, sacred; but it may more probably be from *jaron*, a dart, Arab., which it exactly represents.

Arum maculatum, Wake-Robin, Cuckoo-pint, Cows-and-Calves, Lords-and-Ladies, &c. &c.—The scarlet berries about the close of summer render the hedge-banks gay, when flowers are no more, and their own foliage has long disappeared. The root and the leaves, when recent, are so extremely pungent, that it is highly disagreeable to taste them. Dried and powdered, it is used by the French as a lotion, and is sold at a high price, under the name of "Cypress Powder." It is undoubtedly a good and innocent cosmetic. After the acrimony of the roots has been extracted, either by boiling or baking, they afford a very mild and wholesome farinaceous nutriment, resembling Salep. Many nations prepare the only bread they have from plants as acrimonious as this; first dissipating the noxious qualities by heat. WEDELIUS conjectures that the plant named Chara, on which, mixed with milk and made into a sort of bread, CÆSAR's soldiers subsisted at Dyrrachium during a scarcity of provisions, was either this species of *Arum*, or one much resembling it, which seems not improbable, from the nutritive and farinaceous qualities of the root. Formerly Cuckoo-pint was well known by the name of Starch-wort, a pure and white starch being obtained from it. DIOSCORIDES reports that the leaves may also be eaten, after being dried and boiled. GERARD asserts a curious fact from ARISTOTLE, ÆLIMUS, and other ancient authorities—that "Beares after they have lien in their dens forty daies without any manner of sustenance (but what they got with licking and sucking their owne feete), as soon as they come forth, eate the herbe Cuckow-pint:" which seems to prove a sure restorative. In severe snowy winters, according to the observations of Mr. WHITE, the roots are scratched out of the dry banks of hedges and eaten by Thrushes. Its economical uses appear to be well known abroad. In France it bears the name of *Chou Poiore* (Pepper Cabbage), and *Pain de Liévre* (Hare's-bread), as though eaten by those animals. It has been latterly much used in England as a substitute for the Maranta, or Indian Arrow-

root, and is frequently sold as the genuine article. In Portland Island, where the Arum flourishes abundantly even upon the stubble lands, Mr. GRIFFITH observed a number of women engaged in digging up the roots for this purpose for the supply of the London dealers, which they stated to be their regular employment. Repeated washing, or soaking in fresh water many hours, is said to dissipate the pernicious quality. At Weymouth many cwts. are sold annually for starch, or as nourishment for young children and invalids, and also used in pastry, puddings, &c. From the Flat Holmes might be collected a sufficient quantity to be worthy the attention of Bristol market. In some parts of Worcestershire it is designated "Bloody-men's-fingers," and some commentators have imagined it to be the Long-purples of SHAKSPEARE, rather than *Orchis mascula*, though with less probability. The flower of this plant has been cited as affording a remarkable instance of the spontaneous heat generated in vegetables; which, according to the observations of LAMARCK and SENEBIER, is evolved in a very obvious degree, for several hours subsequent to the first opening of the spatha.

Arundo.—Arundo, inis, f., the Latin for a Reed; "*ab arendo, quod cito arescat.*" DE THÉIS says it comes from *arn*, the Celtic word for water.

Arundo phragmites, Common Reed, Loch Reed (Scotch).—It is useful for thatching, and making slight fences. Where herbage may be wanted, either for beauty, or shelter for water-fowl, nothing can be more suitable; it does not often seed, but it could be easily introduced where required, by planting its roots in spring. The panicles are used by the country people in Sweden to dye woollen cloth green. Reeds are much more durable than straw for thatching, and are so valuable for that purpose in the fen counties, that when broken down by the innumerable flights of Starlings which congregate upon them, the injury is attended with serious loss. Screens to keep off the cold winds in gardens are made of them; and they are laid across the frame of wood-work, as the foundation for plaster floors; also in demand for brick-makers; and to make pens for sketching or etching where freedom is required. Till the introduction, in the seventh century, of the more proper pens (*penna*), made of the quills of birds, they were likewise in general use for writing, though inferior to those produced in warmer climates. They also occasionally serve for the shafts of arrows. Swamps, and lands occasionally overflowed, may be rendered productive by being planted with Reeds, for which purpose pieces of the root should be placed in the ground.

CORRESPONDENCE.

Destruction of Game by Rats.

To the Editor of the Naturalist.

Dear Sir,—In the early part of June last I discovered a Partridge's nest in a field of winter Tares; and since the crop was being cut as green food for my Horses, I was very anxious that she should hatch her eggs before the mower came to the nest. On the 23rd I found the eggs bare and cold, and the old bird gone. I at first supposed that she had forsaken her nest; but the next day, when cutting the Tares, the man called me to look at a collection of Grass and straw gathered together in the form of a nest. This he pronounced to be the work of a Rat; and on looking closely, a beaten path was discovered leading towards the Partridge's nest, which was about six feet from it. While deprecating the felon that had caused this mischief, the mower pulled out the poor old bird, evidently killed by the Rat, as part of the breast was eaten away, and many feathers were strewn around. Not many minutes elapsed before the villain bolted, when, setting on a trusty terrier, the Rat soon gave his last squeak. I opened his stomach, and found it contained some part of the Partridge. Gamekeepers should do all in their power to clear the dry banks and hedges of this noxious vermin, as I have no doubt much game is destroyed by them during the period of incubation.

As I said before, the eggs were quite cold; but on breaking one, I found the little bird within alive, and it soon began to utter its small cry. I took the remainder of the eggs and put them under a hen; she hatched them all (nine), but killed them in pecking the shell.

Necessity of Freedom in Scientific Inquiry.

I trust your boldness, and the *truths* expressed in your last number (Vol. III., p. 443), will not hinder your sale; but, should it do so, you will have the satisfaction of knowing that you only lose the prejudiced and narrow-minded.

Destruction of Foliage by Insects.

I do not know if it is worth your notice, but in some of our woods (at the end of May) the Oak foliage was entirely eaten up by a small caterpillar. The woods looked like winter, and the falling of the insect was so incessant that it sounded like the dropping of a smart shower; the trees have now recovered, and many of them have two sorts of leaves, the original dark green, the new light green.

With best wishes for your prosperity,

Your very truly,

Maidstone, Aug. 14, 1838. W. H. Bensted.

[It has been denied that eggs incubated several days, and then allowed to cool, will be hatched on again receiving the warmth of the parent's breast. But we can fully support Mr. Bensted's experience on this point. If the chicks are vigorous, there is no need for any external assistance in extricating them from the shell.

We are well aware of the class of subscribers we lose by advocating the cause of truth; but in fact the predicted "decrease" from this cause has proved an *increase*. We write wholly apart from all mercenary considerations; but are naturally pleased to find that the path selected has given almost universal satisfaction.

Trees frost-bitten or otherwise weakened, generally receive furious attacks from the insect tribes early in spring.—Ed.]

CHAPTER OF CRITICISM.

The Ring Pigeon Eats the Bulbs of Turnips.

To the Editor of The Naturalist.

Dear Sir,—In *The Naturalist*, Vol. III., p. 290, I stated that during last winter the Ring Pigeon (*Columba palumbus*) not only eat the leaves but also scooped holes in the sides of the bulbs; and in a note you ask, if I am sure of this, and state that the fact is new to you. Having repeatedly observed them thus employed, I had no doubt of it when I wrote to you, and I have since had it confirmed. In an entomological excursion which I lately took to the west of Fife, I happened to pass through the town of Auchtermuchty, on the day on which the great annual fair was held. I there met with five or six farmers, some of them extensive Turnip-growers, and thought this an admirable opportunity of ascertaining if it was known to them that the Ring Pigeon eats the bulbs of the Turnips. On the question being proposed, they all agreed that it does so; and the following facts were ascertained:—That the Ring Pigeon eats the leaves of the Turnip first; that it also eats the bulbs; that it eats the bulbs even although the winter is not very severe; that it prefers the bulb of the Swedish Turnip to any other; next the Yellow Turnip, and when neither of these can be procured, it takes the white; that when these holes are made, the frost causes the Turnip to rot, and thus great quantities of them are destroyed. I have since inquired of several other farmers on the same subject. They are

all (with the exception of one, who said that the bulbs were hollowed out by the Crows) of the same opinion. I should therefore think that there is no doubt that the Ring Pigeon is very destructive to Turnips by eating the bulbs as well as the leaves.

I am, Sir,
Yours, &c.,

Law Park, near St. Andrews,
Aug. 7, 1838.

HENRY BUIST.

[In the *Magazine of Natural History*, that acute naturalist CHARLES WATERTON, Esq., states that the Ring Pigeon "feeds voraciously on the leaves, and *not on the body*, of the Turnip." He repeats this statement in his recently-published *Essays*, p. 146.—ED.]

Is *Papilio podalirius* a British Insect?

To the Editor of the Naturalist.

Bewsey House, Warrington,
Aug. 10, 1838.

MY DEAR SIR,—I feel inclined to *retain* myself as *special pleader* in favour of the claims of *Papilio podalirius* to rank as a British species. I confess I should feel vexed if we had to lose so interesting an ornament of our Fauna; and cannot but believe that the evidence we have (though chiefly presumptive) is sufficient to sustain its right as a British insect. I shall notice briefly each of the cases which have been brought forward to prove its occurrence in England.

1. Mr. READ's capture is important; for though he may have some reason for suspecting that the specimen is not indigenous, yet that it did occur *alive* in Britain is a fact which ought not to be lost sight of in the investigation. I should be glad to know the reasons Mr. READ has for doubting its genuineness as a British example (See Vol. III., p. 348).

2. Although the fact that Mr. G. ROBERTSON and Dr. BROMFIELD have *purchased* specimens as British, in our want of further information, proves nothing, as they may probably have been imposed upon, yet Mr. ALLIS's specimens are not open to this objection. The circumstances which he has detailed at p. 38 of the second volume afford fair presumptive evidence (to characterise it no stronger) that *his* insects are genuine.

3. Why has the specimen which the Rev. F. W. HOPE (an excellent authority) informed Mr. STEPHENS (*Illustr. Brit. Ent.*, 145) was taken at Netley, Salop, been lost sight of? I am not aware that there has been any doubt cast upon this occurrence of *P. podalirius* in Britain.

4. Miss Jermyn in her *Vade Mecum** mentions "Bedfordshire," and "St. Osyth, Essex," as localities for this species; on what authority she has not thought it necessary to inform us, and consequently I can only refer to them with suspicion, which is increased by our fair Aurelian adducing in her observations on *P. podalirius* the capture of a species by Mr. Hawkins in the New-Forest, in 1827. The said New-Forest specimen having been long, and, I had thought, previous to reading the *Vade Mecum*, universally, known to have originated in a mistake! Miss Jermyn is indeed, in more cases than one, much too careless in admitting localities. For instance, the student is informed in her "synoptical table" at p. 59, that *Doritis Apollo* occurs in the Island of Lewis; this locality having proceeded from the supposition (long since exploded) that a few *continental* specimens in the possession of Lord Seaforth were captured there.

I have now stated the case *pro* and *con;* and shall be obliged by any of your readers furnishing information on points 1, 3, and 4 of the above remarks; and especially by Mr. Read noticing the *first.*

I remain,

Faithfully yours,

Neville Wood, Esq., &c. Peter Rylands.

* *The Butterfly Collector's Vade Mecum*, by Miss Jermyn (now Mrs. Ford), Ipswich (3rd edit.), 1836.—Not having then seen this work, I omitted noticing it in the paper on "Entomological Bibliography" (III., 19). It is neatly got up, and displays a tolerable development of the organ of Order on the part of the authoress. But this is almost all that can be said in favour of it, as throughout, I am sorry to say, it is a compilation, and in many cases an incorrect one. One or two errors are pointed out above, and in addition I shall only remark that several insects are given as "*ascertained British species according to Mr. Duncan;*" respecting which that gentleman in his *British Butterflies* expresses himself *very doubtful* (*e.g.*, *Dor. Apollo*, *Pol. alcon*, &c.). The authoress congratulates herself that "this little work appears to have led to the publication of Brown's *Book of Butterflies*;" with which, and the ex-professor's *Conspectus*, it may certainly be laid on the shelf. Mr. Duncan's vols. in the *Naturalist's Library* are worth the *Vade Mecum* and the Captain's *Book* put together.—I am afraid I shall be accused of ungallantry; but it is the *work* I remark upon; and my observations are the more necessary as it has been quoted by some as an authority.

MEMOIRS OF EMINENT LIVING AND RECENTLY-DECEASED NATURALISTS, BRITISH AND FOREIGN.

No. I.—John Latham, M.D., F.R.S., A.S., L.S., &c.

In conformity with the arrangement announced in our last number (Vol. III., p. 498), we now proceed to lay before our readers the commencement of the above series, which will be regularly continued every alternate month.

In noticing the life and labours of the late Dr. Latham, we shall seem, probably, to some of our readers, to be recurring to matters out of date—the subjects of a former generation. Perhaps indeed there were not many beyond the range of his personal acquaintance who were aware that this celebrated naturalist was living until very recently, at Winchester. But when we consider that his name has, for upwards of half a century, been quoted as an authority wherever Natural History is a study, and when we remember that to the close of his long life he still retained the respect of the scientific world, his memoir cannot be looked upon as otherwise than deeply interesting.

A life, however lengthened, spent amidst pursuits such as those of our late venerable friend, is not likely to afford very much that is interesting to the world at large; but to the student of Nature any memorial of such a man must be considered valuable.

John Latham was born at Eltham, in Kent, June 27, 1740. He was the eldest son of John Latham, a surgeon and apothecary of that place, who was descended from an ancient family in Lancashire. His mother was a descendant of the Sothebys, in Yorkshire. When six years of age he was placed at Merchant Tailors' school. Although his talents and acquirements gave a fair promise of his sharing the honours and advantages of that establishment, he was removed from thence at the age of fifteen, to prepare himself for his father's profession, to which the turn of his own mind strongly inclined him. He studied Anatomy under the celebrated Dr. W. Hunter; and having completed his education at the London hospitals and schools of Medicine, he commenced business at Dartford, in 1763, at the age of twenty-two, and married in the same year.

Natural History must have engaged his attention, and been eagerly pursued by him, from a very early age. There is in possession of his family a portrait of him taken when he was about ten years old, and in which he is represented with a bird upon his hand; and so soon as February, 1771, we find him in correspondence with Mr. Pennant, who had then just published his *British Zoology*. Mr. Latham having at that time himself made a considerable collection of

zoological subjects, although a stranger to Mr. Pennant, was induced to communicate to him some matter, the result of his own observations, which he thought might be interesting to that gentleman. On this occasion Mr. Pennant replies:—"It gives me inexpressible pleasure to have my poor endeavours to promote science approved by a gentleman so well versed in my particular study as you appear to be. Receive my best thanks, and grant me the favour of your future correspondence." This correspondence was continued without interruption, until the death of Mr. Pennant in 1799.

In 1772 Sir Ashton Lever introduced himself by letter to Mr. Latham, as a brother collector of whom he had heard much, and proposed a correspondence for their mutual benefit. Sir A. Lever was not a man of our day, but his name is still familiar to every naturalist; and the following letter, dated two months only after the first, and before these gentlemen had seen each other, will, we think, be interesting to our readers; making them acquainted with one trait, at least, of Mr. L.'s character, while it is a distinguished testimony to the frank and liberal disposition for which the subject of our memoir was strikingly remarkable:—

Sir Ashton Lever to Mr. Latham.

Alkrington, Jan. 24, 1773.

Dear Latham,—Give me leave to call you by that familiar name, as I flatter myself we shall be correspondents as long as we both live. Your very generous disposition suits me, and I shall be much mortified if I cannot make you proper returns for whatever you send me. You will allow me a little time, and I will do my best endeavour to pick some things out of this collection that will please you. The Manakins are the most elegant birds I ever saw, and your taste in the disposition of them is most exquisitely beautiful. You have set us on our mettle, as I tell you honestly, I have not among all my cases any so attractive to my visitors as this..... To make my remarks on all the articles you have sent me would exceed the bounds of a letter; but of this I assure you, I never received so generous a present from any one, since I began to collect, though I have frequently had a right to expect great matters.

Let me know any particular subjects you may want that may fall in my way to supply you with, as my inclination, as well as my gratitude, will always induce me to shew you how much I am

Affectionately yours,
Ashton Lever.

The opportunities of adding to his ornithological collection, and of inspecting and taking drawings of rare specimens, which this connexion afforded, were of

much service to him. Sir A. Lever was as liberal in rendering him assistance in his pursuits, as he had been desirous of obtaining his friendship, and he never failed to give him timely notice of any fresh accession to his museum. The following letter is dated August, 1776:

Sir Ashton Lever to Mr. Latham.

Dear Latham,—Having plundered Amsterdam, Leyden, Haarlem, the Hague, Rotterdam, Delft, Maesensluys, the Brill, and Helvoetsluys, I am now returned to England, and in consequence of the above voyage shall have some duplicates for you. You should see me soon, as I have wonderful things to tell you.

Yours, with compliments to Mrs. L.,

Ashton Lever.

By this time Mr. Latham had formed an acquaintance with most of the leading naturalists and collectors in England. His acknowledgements to these are placed on record by himself. Sir Joseph Banks, in particular, when he found him disposed to arrange materials for a work on Ornithology, handsomely gave up the whole of his splendid collection of drawings and specimens, for inspection and description.

Thus encouraged and assisted, he published, in 1781, the first volume of his *General Synopsis of Birds*. This was followed, at irregular intervals, by five others. A *Supplement*, in two volumes, completed the undertaking in 1802.

In 1775 Mr. Latham had been elected a Fellow of the Royal Society, of which he lived to be the "Father," or oldest member. In 1788 he was chosen a Corresponding Member of the Medical Society of London. During this year he took a prominent part in the formation of the Linnæan Society, of which he was a member from the beginning. There already existed a Natural History Society, but it had not flourished, or been attended with any satisfactory results. Mr. Latham had formed an intimacy with Dr. (afterwards Sir J. E.) Smith, who, on the death of Linnæus, was fortunate enough to become the purchaser of his extensive library and collection. Conceiving that a Society formed for the purpose of promoting the principles and views adopted by the great Swedish naturalist might prove acceptable to the world in general, he communicated his sentiments to Dr. Smith. The suggestion was favourably received, and in consequence a meeting of a few scientific friends took place at Dr. Smith's residence at Chelsea, where the proposal was made, and eagerly embraced by all present. The result was the immediate formation of the Linnæan Society, of which Dr. Smith himself was with great propriety elected President. And here we cannot forbear quoting, from the Introductory Discourse, delivered by Dr. Smith at the first meeting of the Society, a passage which, while it asserts the benefits which

such institutions confer on mankind by the promotion of science, may supply encouragement to every individual who, like the subject of our memoir, feels disposed to devote a portion of his talents to the investigation of Nature :—

"The slightest piece of information which may tend to the advancement of the science, we should thankfully receive. However trifling in itself, yet, combined with other facts, it may become important. Whatever relates to the determination of species, even in the lowest, and seemingly unimportant tribes of Nature's works, ought never to be neglected. Nor let the humble and patient student of this very difficult part of Natural History be discouraged by the sneers of the supercilious coxcomb, or of the ignorant vulgar. He who determines with certainty a single species of the minutest Moss or meanest insect, adds so far to the general stock of human knowledge—which is more than can be said of many a celebrated name : no one can tell of what importance that single fact may be to future ages : and when we consider how many millions of our fellow creatures pass through life without furnishing a single atom to increase this stock, we shall learn to think with more respect of those who do."

By the preface to the *Supplement* of 1787, we find that our author was, at that time, contemplating the publication of his *Index Ornithologicus*, containing brief descriptions of the genera and species included in his larger work; it appeared in 1791. This very useful work, written in what might at that time be termed a universal language, was received with great applause both in Britain and on the Continent. Yet it is well known that it appeared too late to prevent the loss of a portion of the author's just fame. Several hundreds of birds, unknown to Linnæus, had been classified and named for the first time by Mr. Latham, in the *General Synopsis*. In 1788 Gmelin issued his edition of Linnæus's *Systema Naturæ*, in which he supplied the deficiencies of the original work from more recent writers, translating into Latin those names which then existed only in the modern languages. Hence it frequently happens that the names of Linnæus and Gmelin are referred to as authorities with respect to birds which were in fact wholly unknown to the former, and with which the latter alone became acquainted through the industry of our author.

In consequence of the favourable reception which his name met with abroad, Mr. Latham was elected an Honorary Member of the Natural History Society at Berlin, and of the Royal Society at Stockholm. In addition to these honours, the University of Erlang, unsolicited, conferred upon him the degree of M.D. The diploma was forwarded to him in the beginning of 1795. A compliment so handsomely offered could not but be gratefully felt by him; but he was unwilling to assume the title it bestowed. Some of his friends, however—among whom Sir Joseph Banks was the foremost—insisted on addressing him from that time as Dr. Latham.

In 1796 (the year after receiving his honorary degree) he retired from business. The possession of a handsome fortune, almost entirely realized during a practice of two-and-thirty years, was the reward and testimony of his assiduity and success in the duties of his profession. And we beg the attention of our readers to the remarkable, the instructive fact, that in the leisure hours of these few years, by pursuits which constituted his relaxation and amusement amidst the fatigues of one of the most uncertain and most laborious of all professions, this indefatigable man contrived to establish a reputation such as few are fortunate enough to obtain by the uninterrupted employments of a whole life. When it is related that, in addition to his voluminous correspondence with eminent naturalists and friends on the subject of his favourite pursuits, the inspection of museums, and taking drawings of specimens lent to him for the purpose; he etched every copper plate in his original work, stuffed and set up almost every animal in his very extensive museum, and put together, with his own hands, a great many of the very cases in which they were disposed; it is difficult to conceive how he could have been, as he most certainly was, one not only of the most punctual of men of business, but of the most attentive to all the duties and courtesies of life.

Romsey, in Hampshire, was chosen as the place of his retirement. It was the residence of his only surviving son, and in the neighbourhood of that of his only daughter. Here he continued, with the same unwearied eagerness, the pursuits he had always loved, and which his leisure now enabled him to extend.

The world knew him almost exclusively as an ornithologist; but his friends were accustomed to consult him as one intimately versed in all the works of Nature and of art; and his surviving relatives can show that there is scarcely a department of Natural History which might not have been enriched from his original notes and manuscripts, and that many of the leading works of his day were deeply indebted to him for materials and revision. He was also a worthy Member of the Society of Antiquaries, into which he was elected in 1792; and the noble Abbey of Romsey supplied ample encouragement to an inquiring mind. At one time he intended to have presented to the world a history of this place, which he had actually completed, on a very extensive scale; and he was only deterred by the expense and risk of publication on a subject of mere local interest, except to the professed antiquary. But we would suggest, that it might still be worth while for the Society of Antiquaries to publish, at its own expense, the elaborate work of its late venerable member.

He had enjoyed a leisure of more than twenty years in affluence, when a series of unexpected calamities in his family not only caused him the severest distress of mind, but plunged him at the age of eighty in a state of almost utter destitution. Happily a home was left him in the house of his son-in-law, W. N. Wickham,

Esq., of Winchester. Hither he retired with his second wife, in 1819. He was enabled to save some of the choicest of his books from the wreck of his property, and that placid disposition which characterized him through life, aided, we trust, by higher hopes, enabled him to settle down, in the bosom of his daughter's family, into his usual habits and pursuits.

We find, by a letter to Col. MONTAGU, dated 1809, that he had at that time completed the reconstruction of his original work, with a view to a second edition. Some difficulties occurred on the part of the booksellers, and it was postponed for the time. In 1811 he had revised, and largely augmented with notes and observations from this, the ornithological part of PENNANT's *British Zoology*, of which a second edition was published by his son, Mr. D. PENNANT. But although he had thus drawn upon his own work, he never relinquished the idea of re-publishing it himself entire, and continued to add daily to its stores.

As much with a desire of withdrawing his mind from the painful events to which we have alluded, as with the hope of pecuniary advantage to the author, his friends now pressed him to print, by subscription, the work which he had prepared. Accordingly, in 1821, he commenced the publication of the *General History of Birds*, and it was completed in ten volumes, price twenty-one guineas, in about two years and a half. It was not likely, from the nature of the undertaking, that he would add much to his reputation by this late effort; but it was a curious and an interesting spectacle to see a man who had attained the eighty-second year of a laborious and harrassed life, busily engaged in editing a work which demanded so large a space of time for its completion; and those who have witnessed him during that time retouching the copper-plates, with a steadiness of hand which is supposed to belong peculiarly to the prime of life, will not easily forget their admiration.

He lived nearly fourteen years after the termination of this task, without sorrow or suffering, beyond that which he has in his correspondence described as the *great* evil of old age—to become the survivor of those whom he had valued and loved in life. He was already a widower for the second time, and his only remaining child, Mrs. WICKHAM, died in the beginning of 1835. During this year he first felt the failure of his eye-sight. Infirmities gradually increased; but he was still an active and cheerful man. He took his daily walk alone—for he scorned the assistance of an arm—and if any one was happy enough to ask for information on any subject which his library could illustrate, neither the distance of the room, nor the weight of the folio to be brought down, deterred him from going himself to gratify his inquirers.

Mr. J. E. GRAY, of the British Museum, and one of the doctor's most intimate friends in his latter years, possesses a copy of the second edition of Dr. LATHAM's *Index Ornithologicus*, in which the author himself added all the new species he

could find described in the works of Spix, Temminck, &c., within a few days of his death.

The only paper that we are aware of his having published in periodicals, was an admirable article on the tracheæ of birds, in an early volume of the *Linnæan Transactions*.

The hand-writing of our naturalist at the time when his sight began to fail, was as strong and decided as that of most men at thirty; a fact easily to be believed when it is stated that the autograph under his portrait in our present number, is taken from a letter addressed to Mr. Neville Wood in the *ninety-sixth year of his age*. We cannot refrain from publishing the following letter, proving the kind and courteous spirit, and the clearness of mind which he retained at so advanced an age. To have afforded some solace to the latter days of a man whom we have ever held in the most sincere respect, is, moreover, no small privilege:—

Dr. Latham to Neville Wood, Esq.

Winchester, June 6, 1836.

My dear Sir,—I cannot lose more time in acknowledging the kindness with which you have presented me with your valuable little work, the honour you have done me in inscribing it to my name, and the very handsome manner in which you have noticed my work in the "*Text-Book*."

I assure you that although my infirmities prevent my wonted enjoyment of literature, I have much gratification in the attention paid me by my literary friends; and I must beg to say that you have tended to solace me for my loss of sight, by your kind manner of receiving my *apparent* indifference to your communications.

I have added to my library your very interesting book on "*British Song Birds*," which my grand-children have been reading to me; and I think it peculiarly adapted to charm, as well as to enlarge their minds. I hope you will feel yourself rewarded for the trouble your writings must have cost you, by finding that your labours are appreciated, and that they prove generally useful to the world.

Begging once more to assure you of my sincere thanks for your kindness,

I remain, my dear Sir,

Very sincerely yours,

John Latham.

Dr. Latham's end was rapid, but not unexpected—not the effects of disease, but of exhaustion—the taper burnt fairly out. Four days before his death he exhibited an unusual vivacity, and a sprightliness almost unnatural. This was

followed by a sudden failure of understanding; then of appetite; and he fell into a deep sleep of many hours duration, in which he expired, without a pang, on the 4th of February, 1837. His remains are deposited in the Abbey Church of Romsey.

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The portrait of Dr. LATHAM, at the commencement of our current number, is lithographed by DAY and HAGHE, from an engraving presented by the doctor to Mr. WOOD in 1835. It had then been taken three or four years. A seal containing an impression of his likeness was, he states in one of his letters, "unexpectedly presented to him by his late friend Gen. HARDWICKE."

PROCEEDINGS OF THE BRITISH ASSOCIATION, NEWCASTLE, AUGUST, 1838.

THIS Meeting commenced on Monday, Aug. 20, and continued through the week. The number of members in attendance was greater than ever, and the interest and importance of the papers produced at the various sections do not appear to have diminished. We present our readers with an abstract of the proceedings in—

SECTION D.—ZOOLOGY AND BOTANY.

President—Sir W. JARDINE, Bart.

Vice-Presidents—R. K. GREVILLE, LL.D., Rev. L. JENYNS, Rev. F.W. HOPE.

Secretaries—Messrs. JOHN EDWARD GRAY, R. OWEN, JOHN RICHARDSON, M.D.

Assistant Secretary—Prof. T. RYMER JONES.

Committee—Messrs. JOSHUA ALDER, JOHN ADAMSON, C. C. BABINGTON, J. E. BOWMAN, — BOWMAN, W. BACKHOUSE, THOMAS BELL, THOMAS COULTER, M.D., Messrs. J. H. FRYER, GEORGE T. FOX, ALBANY HANCOCK, W. C. HEWITSON, Hon. T. H. LIDDELL, Mr. EDWIN LANKESTER, Prof. MORREN, of Liege, PATRICK NEILL, LL.D., Mr. GEORGE ORD (Philadelphia), R. PARNELL, M.D., Mr. W. ROBERTSON, Capt. JAMES ROSS, R.N., Messrs. P. J. SELBY, W. THOMPSON, G. WAILES, T. TEALE, W. C. TREVELYAN, W. YARRELL, RICHARD TAYLOR, Rev. W. HINCKS, Captain J. COOK, R.N., Messrs. T. ALLIS, ARTHUR STRICKLAND, H. C. WATSON, G. B. SOWERBY, Prof. EHRENBERG, JOSEPH WOODS, Prof. GRAHAM, M.D.

MONDAY.

The first paper read was "On a species of Fish having four eyes, found on the coast of Surinam." This paper was read by Mr. GRAY, and consisted of a curious account of a fish having a hump at the back of its head, in which were

situated two additional eyes. Several parts of the paper were of a nature to throw suspicion on the good faith of the narrator.

The Rev. L. Jenyns thought, that if the paper could be authenticated, the communication was an important one. The occurrence of four eyes had never before, to his knowledge, been observed in any members of the vertebrate division of the animal kingdom.—The Rev. F. W. Hope stated that, in vertebrate animals, especially the *Insecta*, it was not uncommon to meet with more than one pair of eyes; and, in some instances, the aggregated eyes of insects were divided into two compartments by a transverse membrane, which gave the appearance of two pairs of aggregated eyes. He thought the term Tessarophthalmoid should not be applied to this family, as the term, or an analogous one, was already used in the animal kingdom for a genus in *Insecta*.—Mr. J. E. Gray inquired, whether Mr. W. H. Clarke was present; as, from its nature, he feared, that either there were no grounds for the present communication, or that the statements had been made on the authority of others, and insufficiently examined. He thought the latter might be the case, and that reports might have been given of the above nature, from the existence of *Anableps*, whose eyes are divided by a transverse membrane into two compartments.—Dr. Richardson agreed with Mr. Gray, and thought the present paper might be founded on misstatements with regard to *Anableps*. Agassiz had a fish in his descriptions very much like the present drawing: and by adding a hump, with two eyes at the back of its head, he thought the two would not then differ much. There were other suspicious circumstances about this paper. This fish was stated to have a great number of names, which were, in fact, common words, picked up by sailors in the various countries they visited. Dr. Richardson then explained many of the terms. The existence of four optic nerves was unknown amongst *Vertebrata*, and the alternate opening and shutting of the eyes, seemed to him to be a motion unnecessary to aquatic animals.—The chairman, Sir W. Jardine, had seen so many anomalies in the kingdom of Nature in his lifetime, that he was quite disposed to give the present paper consideration: at any rate, he should institute inquiries after Mr. Clarke, and the meeting would probably resume the subject.

Mr. C. C. Babington, of Cambridge, read a paper "On the Botany of the Channel Islands." He mentioned having discovered the following eight plants in addition to those recorded by him at the last meeting of the Association. (See *Naturalist*, Vol. II., p. 428):—*Ranunculus ophioglossifolius; Orchis laxiflora; Linaria pelisseriana; Myriophyllum alterniflorum; Polygala oxyptera; Ononis reclinata; Potamogeton plantagineus; Carex junctata.* He said that twenty species existed in the islands which had not as yet been noticed in England, and announced his intention of publishing an outline of the Flora of these islands.

Mr. GRAY, in some introductory observations to a "Notice of a New Shell," pointed out several Natural History Collections in the neighbourhood worthy attention. The Museum of the Natural History Society recommended itself to the attention of the members for the liberality with which it was opened to the townspeople and visitors, stating that it was in this respect a rival to the National Museum itself; and indeed was even more available to all classes, as it opened its doors on certain evenings of the week, in order that the working classes might be able to attend. It was also interesting for the excellent, complete, and almost costly manner in which it was arranged; and additionally so to the more scientific visitor, on account of its containing several of the original specimens figured by BEWICK, BROWN, and MILLER, thus affording a means of determining with accuracy the synonyms of those authors, which might be done with the assistance of the excellent catalogue of Mr. Fox. In it was the Wombat sent by BASS to BEWICK, and from which he took his original description: from a misprint, this specimen was said to have more teeth that it really has; and, on this account, ILLIGER having seen a specimen of the Wombat, supposed this must be another genus, and has named this one in his work *Amblotis wombattus*. The colour, too, of this specimen assisted in the mistake, for, having been originally kept in spirit, it had lost its original hue. He also pointed out the collections of Mr. FRYER, of Whitley, the Rev. Mr. MONK, of Preston, Sir JOHN TREVELYAN, of Wallington Hall, and of Messrs. JOHNSTONE, ADAMSON, ALDER, and HANCOCK, of Newcastle. Mr. GRAY then described what he supposed to be a new species of shell, but which Mr. SOWERBY and other members of the Association had seen and were acquainted with. He also exhibited a very splendid specimen of *Balanus Scoticus*, attached to a species of Fusus which had been obtained from the museum of Mr. FRYER.

The Rev. Mr. WAILES exhibited a specimen of the rare insect *Psalidognathus Friendii*. This was a male specimen. Mr. CHARLES ADAMSON brought one to the meeting, supposing it to be the same insect, but on comparing the two they were very different.—The Rev. F. W. HOPE stated that the last insect was a female specimen, and that they differed so much as to be placed in different genera by those who had not seen the two.

As very few papers had been sent to the section this day, Mr. GRAY occupied the time of the meeting by explaining a theory to account for the angular marks found upon some shells. He supposed that the coloured lines were produced by glandular secretions, that the glands were seated in the mantle of the animal, and as they moved with the growth of the animal, deposited their colouring matter. These glands he supposed to be formed double, and directly after their formation to move in opposing diverging lines. When these lines crossed each other, the glands met and were destroyed; but new glands were formed, doubling, diverging,

and becoming eradicated, as the others had done before them; and thus the succession of angular markings was formed.

Several objections were produced to this theory, by Dr. Greville, Messrs. Lankester, Douglass, and others.—Mr. Gray said he brought it forward only as a theory to explain the fact.

Tuesday.

The business commenced by a paper "On the Wild Cattle of Chillingham Park," by Mr. Hindemarsh, of Alnwick. The substance of the paper consisted of a letter from Lord Tankerville, the proprietor of Chillingham, where the breed of wild cattle exists. Nothing is known of their introduction to their present situation, and many have supposed, from their situation, that they are descendants of the Wild Oxen that inhabited the Great Caledonian Forest, extending from the Tweed to Glasgow, at one extremity of which district Chillingham is situated. There are other cattle of the kind in the country, especially at Hamilton, but these are not in such good condition as those at Chillingham. Also at Tyrne Park, Cheshire, and Chartley Park. The last most resemble those at Chillingham. These animals have, pre-eminently, all the characteristics of wild animals, with some peculiarities that are sometimes very curious and amusing. They hide their young, feed in the night, basking or sleeping during the day;—they are fierce when pressed, but, generally speaking, very timorous, moving off on the appearance of any one, even at a great distance. Yet this varies very much in different seasons of the year, and according to the manner in which they are approached. They are beautifully shaped, with short legs, straight back, horns of a very fine texture, and thin skin, so that some of the bulls appear of a cream colour; and they have a peculiar cry, more like that of a wild beast than that of ordinary cattle. With all the marks of high breeding, they have also some of its defects. They are bad breeders, and are much subject to the *rush*. There are about 80 in the herd, comprising 25 bulls, 40 cows, and 15 steers, of various ages. The eyes, eye-lashes, and tips of the horns are black; the muzzle is brown; the inside of the ears red or brown; and all the rest of the animal white. Even the bulls have no manes, but a little coarse hair on their neck. They fight for supremacy, until a few of the most powerful subdue the others, and the mastery is no longer disputed. When two bulls are separated by accident, they fight when they meet, although friendly before, and do so till they become friends again. The cows commence breeding at three years old; the calves suckle nine months; they conceal their calves for a week or ten days after they are born, suckling them two or three times a day.

They are seldom allowed to live more than eight or nine years, at which period "they begin to go back." When slaughtered, they weigh from 38 to 42 stones. One was caught and kept, and became as tame as the domestic Ox, thrived as

well as any short-horned steer could do, and, in its prime, was computed to weigh 65 stones. They are shy in summer, but tame in winter, and will eat hay from a fold, although they will not taste Turnips. When one of the herd becomes weak or feeble, the rest set upon it, and gore it to death. At the end of the last century, similar cattle existed at Burton Constable, Yorkshire, and at Dunnlary, in Dumfriesshire, but these are now extinct. From the absence of all recent notice of these animals, there appears to be little doubt but they are genuine descendants of the wild cattle of the ancient Caledonian forest. The author quoted a passage from Boetius, descriptive of the ancient Caledonian cattle, and which, allowing for a little colouring, described these animals very well, except in the non-existence of a mane. The cattle at Dunnlary had black ears, but in all other points resembled those of Chillingham; and this may be accounted for by a statement of Bewick, that about forty years ago some of the animals had black ears at Chillingham, and were shot by the keeper. On the whole, the author was inclined to think these animals the survivors of the Caledonian cattle, which undoubtedly extended through the northern provinces of England; and that, under the protection of the owners of Chillingham, they had escaped the general destruction dependent on the advancement of civilization, &c., in the country.

Mr. Selby knew these cattle very well. Swainson had referred them to the genus *Urus*, but he thought them at any rate a species of our domestic genus *Taurus*. Mr. Webb Hall considered this paper as a breeder of cattle. It was extraordinary that so much purity and high character should remain amongst so small a flock of animals. It was opposed to all the conclusions of recent physiologists. The only means he had of explaining the fact was the relative number of the two sexes in the herd, and the care that was evidently taken to prevent the existence of tainted or imperfect animals amongst them.

Prof. Morren, of Liege, then read a paper, in French, "On the production of Vanilla in Europe." The author stated that there was some difficulty in determining the species from which the present supply of Vanilla was obtained. He had succeeded in cultivating and obtaining fruit from *Vanilla planifolia*. It does not naturally produce odoriferous fruit. The author suggested that it might be grown in our intertropical colonies, but thought the climate of Britain not adapted for it. In order to obtain good fruit, the plant should be allowed to grow five or six years; the fruit was not in proportion to the flowers; and the older, the larger, and the more branches the plant possessed, the better was the fruit. Exposure to the sun was not necessary for the maturation of the fruit, shade, heat, and humidity being the three conditions necessary for the flowers. He then went into several particulars with regard to its cultivation, for a notice of which see *Naturalist*, Vol. III., p. 492.

Dr. Greville thought it might be an object to procure cheap Vanilla in France, where they used so much, but he believed in England very little was consumed.

Mr. Turner, of Manchester, then exhibited several specimens of rare insects from the Museum of the Manchester Natural History Society. They were described by the Rev. F. W. Hope, as consisting of a species of *Lucanus* from South Africa, another of the genus *Cupes*, a third a species of *Danaus*, and a fourth a rare insect belonging to a group he had distinguished by the name *Dicromorina*.

Dr. Parnell read a paper "On some new and rare species of British fishes." The following is a list of the fishes he exhibited, and the localities from which they were obtained:—

1. *Motella cimbria* (*Gadus cimbrius*, Linn.). Frith of Forth, in June.
2. *Pagellus acarine*. Frith of Forth.
3. *Raia chagrinea* (Rough Flapper). Frith of Forth, in May and June.
4. *Raia intermedia*. Frith of Forth, in May.
5. *Trigla lucema*. } South coast of Devon.
6. *Monochirus minutus*. }
7. *Coltus scorpicus*. Frith of Forth.
8. *Platessa limaudioides*. Coasts of Scotland and Devon; common.
9. *Platessa pala*. Frith of Forth, coast of Devon.
10. *Mugil chelo*. Frith of Forth, coast of Devonshire, West of Scotland, and Berwick.
11. *Trigla gurnardus*. From several specimens of this fish that he had seen, Dr. Parnell was inclined to refer *Trigla Blochii* of Yarrell, and *Trigla cuculus* of Jenyns and Bloch, to the young of this species.

Mr. Jenyns stated that Dr. Parnell had confirmed his statement as far as *Trigla Blochii* was concerned. He thought the mode of distinguishing the species of *Trigla* by the form of the scales of the lateral line very important.

Some general observations were then made by Messrs. Thompson, Yarrell, and Fox, on some of the statements made by Dr. Parnell.

The next paper was by Mr. J. Hancock, "On *Falco Islandicus* of authors," and was illustrated by a specimen and several drawings. The author observed, that under the name *Falco Islandicus*, two distinct species had been included. He then pointed out the errors into which zoologists had fallen, from not having had sufficient opportunities of examining these birds in their native regions. The confusion on this subject appeared to have arisen from the changing nature of the plumage of these birds, the young of one species resembling the old of another in certain stages of their growth, and thus led naturalists to confound one with the other. The author having had opportunities of examining these birds, had come to

the conclusion, that under the name *Falco Islandicus* two distinct species existed; and concluded his paper by stating, that he had retained LATHAM's name of *Islandicus* for the true Iceland species, as the most appropriate, it being peculiar to that island. The other he named after the country in which it is most abundantly procured, *Grœnlandicus*, and which, in fact, was the name given to the young of the other bird by LINNÆUS. The descriptions of these birds were as follows:—*Falco Islandicus*, ground of the upper plumage a dark lead or Mouse colour, barred and spotted with cream colour, under parts ground buff, marked with streaks, heart-shaped spots and bars of dark Mouse colour, wings reaching to within one inch and a half of the tail. Synonyms, figures, &c.:—Iceland Falcon, PENN. *Arct. Zool.*, adden. C., Vol. I., p. 252; Greenland Falcon, PENN. *Arct. Zool.*, adden. D., Vol. I., p. 257; Collard Falcon, PENN. *Arct. Zool.*, Vol. I., p. 158; *Falco gyrfalco*, TURT. LINN., Vol. I., p. 158; Iceland Falcon, LATH., No. 50. Dimensions, adult male, length one foot nine inches; extent of wings three feet ten inches; female, one foot eleven inches, wings four feet two inches. —*Falco Grœnlandicus*, ground of the plumage pure white, upper parts elegantly marked with arrow-shaped spots of a dark grey, under parts and head streaked with the same, wings reaching to within two inches of the end of the tail, second primary the largest. Synonyms and figures:—Gyrfalcon, PENN. *Arct. Zool.*, Vol. I., p. 232; *Falco Grœnlandicus*, TURT. LINN. (this is the young), Vol. I., p. 147; *Falco Islandicus*, TURT. LINN., Vol. I., p. 155; *Falco candicans*, TURT. LINN., Vol. I., p. 158; Iceland Falcon, Var., LATH., p. 71; Spotted Iceland Falcon, Var., LATH., 71. Dimensions, adult male, length one foot nine inches; female, length one foot eleven inches; extent of wings, three feet ten inches. The paper was illustrated by some well-executed drawings; and a stuffed specimen of the bird was exhibited.

Mr. A. STRICKLAND observed that we ought to be careful in making colour a means of distinction amongst birds; but considered that the author of the paper had substantiated the claims of his bird to be characterised as a distinct species. He thought the fact of the existence of two species of this kind was in some measure confirmed by the circumstance that falconers were in the habit of selecting their falcons from a particular locality, as the others were not so valuable birds, those from Iceland being preferred. Why this subject had not been clearly understood, was the difficulty of procuring Iceland falcons, which were monopolized by the King of DENMARK for his private use. This paper seemed, however, to have cleared up the difficulty.—Mr. SELBY had never had the opportunity of seeing this bird before, and his impression, from the remarks in the paper, was, that there were two distinct species.—Mr. Fox took this opportunity of stating, that in the Museum of the University of Durham there was a fine collection of Iceland birds: Mr. PROCTOR, the sub-curator of the

museum, having been sent out to that island for the express purpose of collecting birds, and having come home, after making remarkable exertions, with not less than 150 different species, being fifty more than had been at present described as existing in that island.

Col. Sykes read a paper, on *Canis jubatus* of Azara, and exhibited the skin of this animal with that of a European Leopard. The author thought this *Canis jubatus* was not rightly classified and named. It differed from the Dog family in its nocturnal and solitary habits; its tail also was thicker, more bushy, head flatter, eyes smaller, nose sharper, and the whole animal more bulky. If it differed from the Dog, it differed more from the Fox and Wolf; and he proposed to refer it to the genus Hyæna; or, if this could not be admitted, he would make it a distinct genus, which would then be the representative of the Hyæna tribe in America, which we must suppose possessed some analogue of that tribe in the old world.

The next paper was "On Vegetable Monstrosities," from his collection, by the Rev. W. Hincks. The author made some introductory remarks on the importance of the study of monstrosities, and concluded by a distribution of them into five classes:—1. Cases of coherence and adherence of parts not usually united, or of separation of those which are ordinarily connected; 2. Anomalies depending on the comparative development of parts of one circle; 3. Anomalous transformations of organs; 4. Monstrous exuberances of growth, by which the number of parts is altered, independently of transformation, the number of circles of parts is increased, or the axis irregularly extended; 5. Anomalous abortions or suppressions of parts usually present in the species.*

[We have drawn up the fore-going report with the kind assistance of the gentleman who rendered our readers the same service last year. The concluding portion of the proceedings will appear in our next number.—Ed.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

GEOLOGICAL SOCIETY.

May 9.—Rev. W. Whewell, Pres., in the chair.—Two communications were read:—

1st, "An Account of the Fossil stem of a Tree lately discovered in the Coal

*We confine ourselves to this brief notice of Mr. Hincks's communication, because we have reason to believe that the author will favour us with the entire paper for publication.—Ed.

Measures near Bolton-le-Moor," by Dr. Black. This fossil, when first exposed in the quarry, was about thirty feet long, but when it was examined by Dr. Black only twelve feet remained *in situ*, the thicker end of which was about fifteen inches in diameter, and the thinner end nine inches. It traversed three strata, and was inclined at an angle of 18° to the north-east, the strata dipping from 12° to 15° to the south-west, or in an opposite direction. The interior of the stem consisted of a finely-grained Sandstone mixed with carbonaceous matter, Clay and Oxide of Iron; and the surface was singularly striated and furrowed, as if from contraction or pressure, and was generally coated with a layer of Coal. Along the whole length of the fossil was attached, and in some places apparently imbedded in the bark, a *Sternbergia*, about an inch in diameter. The allocation of these two plants formed the principal object of Dr. Black's communication; and he has been induced to infer, from the condition of the fossils, that the *Sternbergia* was not accidentally placed in juxta-position with the larger stem, but that it was originally a parasite, resembling, in this respect, the mighty creepers of tropical regions.

2nd, "On the distribution of Organic Remains in the strata of the Yorkshire Coast," by Mr. Williamson.

ROYAL SOCIETY.

May 31.—Davies Gilbert, Esq., V.-P., in the chair.—The only paper read in relation to Natural History was the following:—

"An Experimental Inquiry into the Influence of Nitrogen on the growth of Plants," by Robert Rigg, Esq.

The author, after briefly alluding to a former paper laid before the Royal Society, describing the chemical changes which occur during the germination of seeds, and during some of the decompositions of vegetable matter, proceeds, in the present paper, to trace a connection between the phenomena exhibited during the growth of plants and the direct agency of nitrogen. The experiments by which the author supports his views are arranged in separate tables, so drawn out as to indicate, in about 120 vegetable substances, not only the quantities of carbon, oxygen, hydrogen, nitrogen, and residual matter, but also the quantity of nitrogen in each compound, when compared with 1,000 parts by weight of carbon in the same substance. The most important of these tables are those which exhibit the chemical constitution of the germs, cotyledons, and rootlets of seeds; the elements of the roots and trunks of trees, and the characters of the various parts of plants, especially of the leaves, at different periods of their growth. From this extensive series, which is stated to form but a small portion of the experiments made by the author in this department of chemical research, it appears that nitrogen and residual matter are invariably the most abundant in

those parts of plants which perform the most important offices in Vegetable Physiology, and hence the author is disposed to infer that nitrogen (being the element which more than any other is permanent in its character), when combined with residual matter, is the moving agent, acting under the living principle of the plant, moulding into shape the other elements. The method of ultimate analysis adopted by the author enables him, as he conceives, to detect very minute errors, and therefore to speak with certainty as to the accuracy and value of every experiment.

June 21.—Francis Baily, Esq., V.-P. and Treasurer, in the chair.—The chairman announced that "Her Majesty's signature had been received in the Charter-Book as Patroness of the Society." This we consider in the light of a distinguished honour conferred upon the Queen. A paper was read "On the Structure of Teeth, their Vascularity, and their Relation to Bones," by John Tomes, Esq. Communicated by Prof. Bell.

"On the Evolution of Nitrogen during the Growth of Plants, and the sources from whence they derive that element." By Robert Rigg, Esq. Communicated by the Rev. J. B. Reade, M.A., &c.

In this communication the author follows up his inquiry into the influence and importance of nitrogen in Vegetable Physiology, by noticing, in the first place, the experiments of Dr. Daubeny, M. De Saussure, Sir Humphry Davy, and those which he himself has made; all of which tend to prove that nitrogen is evolved during the healthy performance of the functions of plants; that the proportion which it bears to the oxygen given off is influenced by the sun's rays; but that owing to the necessary exclusion of the external atmosphere, during the progress of the experiments, it is impossible, with any degree of accuracy, to calculate the volume of these evolved gases during any period of the growth of plants in their natural state. If to this indefinite quantity of nitrogen given off by plants there be added that definite volume incorporated into their substance and shown in the author's former tables, the question arises, Whence do plants derive their nitrogen, and does any part of it proceed from the atmosphere? A problem which the author proposes to solve by a series of tabulated experiments upon seeds, and seedling plants, indicating a large excess of nitrogen in the latter, and under such circumstances of growth that he is compelled to fix upon the atmosphere as its source. By the same mode of experimenting, the author attempts to show that the differences which we find in the germination of seeds and the growth of plants in the shade and sunshine, are apparently due in a great measure to the influence of nitrogen. And he concludes by observing, that he does not touch upon the practical application of the subject, wherein the real value of the inquiry consists; it is his object to draw attention to an element which, though in some instances so minute in quantity as to be with difficulty detected

in our balances, has nevertheless been wisely assigned to discharge the most important functions.

"On the Action of Light upon the Colour of the River Sponge." By JOHN HOGG, M.A., F.L.S., &c., Fellow of St. Peter's College, Cambridge. Communicated by Prof. BELL.

The author found that the green colour of *Spongilla fluviatilis*, the River Sponge, is acquired solely through the agency of light, and is lost when the Sponge is removed from the influence of light. As this does not appear to be the case with *Actineæ*, *Hydra viridis*, or any other *Polypes*, the author is disposed to consider this production as being nearer allied to *Algæ* or *Fungi*, than to any tribe belonging to the animal kingdom.

HORTICULTURAL SOCIETY.

June 5.—H. M. DYER, Esq., V.-P., in the chair.—It appeared from the Meteorological Journal kept at the garden, that the mean temperature of the past year was 48.52, whilst that of the ten preceding years was 50.62, and that the quantity of rain was four inches less than the annual average; so that the year was both colder and drier than usual. It was stated, that at the late exhibition the specimens exceeded 900 in number, and that additional tables, to the extent of 200 feet, were required for their display.—The Hon. F. STRANGWAYS exhibited some wicker-work intended for the preservation of half-hardy plants in winter; as also leaden labels which, being punched and painted over, were very durable. The prizes awarded were silver Knightian medals to Mr. LUMSDEN, for a collection of ten shrub Calceolarias, and GEORGE BARKER, Esq., for *Epidendrum primulinum*, an Orchidaceous plant, more particularly remarkable for its perfume. Silver Banksian medals were also awarded to Mr. GLENDENNING, gardener to Lord ROLLE, for six Pine-apples; Mr. LOWE, of Clapton nursery, for *Clematis azurea grandiflora*; Mrs. LAWRENCE for *Pavettia caffra*; Messrs. CHANDLERS, for a collection of Rhododendrons; Messrs. MOUNTJOY, for Heartsease; and Mr. MYATT, for Rhubarb. Several rare plants were exhibited from the gardens of the Society, the most remarkable of which was a hardy dark species of Lilac, which will prove a valuable addition to the gardens.

ENTOMOLOGICAL SOCIETY.

June 5.—J. F. STEPHENS, Esq., Pres., in the chair.—Donations of entomological works and of insects were announced, including a valuable collection of British *Chalcididæ*, by F. WALKER, Esq., and a specimen of *Stylops Dalii*, by Mr. THWAITES, by whom a number of this remarkable parasitic insect had been recently captured. Mr. JOHNSON presented a plate illustrating the Natura-

History of the Cane-fly, *Delphax saccharivora*, and Mr. Westwood exhibited drawings of several remarkable and exotic insects, as well as others illustrative of the Natural History of *Nematus gallicola*, *Balaninus salicivorus*, and *Eulophus nemati*, all of which had been traced by him through their different states. He also exhibited a living specimen of the rare *Lyda inanita*, together with the remarkable nest of its larva, which consists of portions of Rose-leaves arranged in a spiral coil, forming a tube, which the larva bears about with it.—Mr. Shuckard mentioned the occurrence of *Strepsiptera* in the bodies of a Wasp from North America, and an *Ammophila* from Gambia. Mr. Hope made some observations upon a case in which a brood of insects had been recently discharged from a tumour in the jaw of an old and infirm person in Lincolnshire. Collections of insects from Sierra Leone and India were exhibited by Dr. Cantor and Mr. Strachan; and the commencement of a memoir, by C. C. Babington, M.A., was read, containing descriptions of the *Dyticidæ* collected by Mr. Darwin during his voyage.

July 2.—J. F. Stephens, Esq., Pres., in the chair.—Several specimens were exhibited from the collection of the Rev. F. W. Hope, which presented instances of insectal and vegetable parasitism. From one of these individuals, a species of the South-American genus *Acanthocephalus*, numerous very long and slender filaments, much longer than the entire insect, and beautifully feathered, had vegetated, and which probably belonged to the genus *Trichia*. In another specimen, one of the large Brazilian *Curculionidæ*, a Dipterous larva had protruded itself between the front of the thorax and the head.—Mr. Westwood noticed a remarkable modification in the habits of the caterpillars of a small Moth, which at first burrows in the leaves of the common Lilac, but after it has attained sufficient strength, it rolls back the leaves, fastening them in a curl with silken thread.—The memoirs read, were:—1. Further notes on the habits of *Stylops Dalii*, by Mr. Thwaites. 2, Conclusion of a monograph on the genus *Popillia*, by Mr. Newman. 3. Description of a remarkable specimen of *Dytiscus marginalis*, in which part of the external marks of sex were obliterated, and partially replaced by those of the opposite sex, by J. O. Westwood. Mr. Yarrell also noticed several somewhat analogous instances occurring in Crustaceous animals.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

Silk-worm Nursery in France.—The Silk-worm nursery established at Neuilly by the King,—and placed under the direction of M. Aubert, has produced the most satisfactory results. From 3,534 lbs. of Mulberry-leaves, 327 lbs. of good cocoons, 253 to the pound, have been obtained. This is, therefore, 185 lbs. of cocoons to 2,000 lbs. of leaves. In the south 80 lbs. of cocoons produced by 2,000 lbs. of leaves, is looked upon as a very good breeding.

Annelidæ.—In addition to what has been before stated concerning this class of animals, we find, that Dr. Milne Edwards has further discovered that many of them have *not* red blood. Consequently, the principal character which has hitherto distinguished them, will become one of minor importance.

BOTANY.

Differences existing between Pears and Apples.—A long and interesting memoir has been presented by M. Turpin to the French Academy of Sciences, on the difference existing between the cellular tissues of the Apple and Pear, which observations are extended to knots of wood, to ligneous kernels, to the calcareous concretions found in the mantle of the Arions, and to the ossification of animals in general. Those authors most tenacious concerning the establishment of these two vegetables as different genera, have drawn their characters from the adherence of the lower part of the five styles, from their villosity, the spheroid form of the fruit, and the stalk being set in a cavity; characters which are frequently effaced. M. Turpin founds his on the absence or presence of those stony concretions which are to be met with in the cellular tissue of the Pear. These concretions he attributes to the aggregations of little globules, which by degrees become clogged with an indigestible matter, which is confusedly deposited in molecules, and from which they receive their opaqueness, hardness, and colour, and to which he gives the name of *sclérogène*. This name of *sclérogène* M. Turpin also gives to all matters which are foreign to organization, which are first held in suspension, then deposited and become hard in the internal cells of the hollow and elementary organs of tissues. Of the cause of this deposit in the Pear he is perfectly ignorant at present, but each concretion, chemically analyzed, consists of bladders of cellular tissue, globules or fecula contained in these bladders, and the *sclérogène*, or indigestible matter, confusedly accumulated and mingled with the globules of fecula. They may be compared to numerous partial and isolated concretions in the

cellular tissue of certain animals, although the latter are composed of different substances, especially those of the Snail. The progress and manner of formation in these concretions, M. Turpin thinks admirably calculated to show the progress of all ossification, whether animal or vegetable.

Preservation of Corn.—Thinking that all granaries were but imperfect shelters from the vicissitudes of weather, General Demarcay has made use of an ice-house situated on his estate, but no longer used as such. Its depth was sufficient to render it impervious to atmospherical changes, and he lined it with wooden planks so as to form a large case, but which was at some little distance from the bottom and the sides of the ice-house, so that it was not liable to the damp of the surrounding earth, and allowed a free circulation of air round its exterior. The Corn was placed so as to fill the case to within a yard of the top; three layers of loose planks were placed at a third of a yard distance between each, and the roof was then formed of thatch, and in a conical shape. The experiment has lasted twelve years, and been constantly attended with satisfactory results. The same grain has remained there for three years, without the slightest alteration, and, what is remarkable, some newly-thrashed Corn, which had been completely wetted while it was measured in the open air, having been placed in the case, was three weeks afterwards found to be as dry and glossy as Flax-seed. M. Libri states, that this plan has a striking analogy to the means proposed by Father Castelli, one of the most illustrious disciples of Galileo, who published his suggestions in Bologna, in 1669, in a work which he called *Opuscules Philosophiques*. These *Opuscules* are too little known, and contain a number of the most interesting articles; among them are some which explain optical illusions, and others which contain experiments on the radiation of heat, proving that, as far back as 1638, the Italians knew the basis of the theory of radiating heat.

Grafting the Chesnut on the Oak.—A gardener at Metz has grafted a Chesnut upon an Oak, and the experiment has been perfectly successful. The advantages attending it in the culture of the Chesnut are very great, from the delicacy of the roots, which by this method may now find a substitute in those of the more robust tree of northern soils.

Perfume of Flowers.—According to the experiments of MM. Schubler and Kohler, of Tubingen, white flowers are the most numerous in creation, and the most odoriferous, and to these succeed the red flowers.

GEOLOGY.

Gigantic Skeleton.—A human skeleton (says a Baltimore paper) has been brought to Baltimore from the Rocky Mountains. It is perfect, and eight feet nine inches high. "There were giants in the earth in those days." Antiquarians

have been of opinion that this Continent was inhabited by a gigantic race of men antecedently to the Indians, who were the ancestors of the present so-called "*aborigines*;" and the circumstance of colossal skeletons and human bones being found in the ancient mounds of the far west would seem to favour the supposition. It is clear that the ancient animals of North America were of immense size, the Mastodon to wit, the bones of which are quite common; and the Indian tribes have traditions of "the great beast that crushed the Pine-trees in his walk, and fed upon the tall branches of the forest, or devoured men and cattle."

REVIEWS OF NEW PUBLICATIONS.

Letters on the Natural History of the Insects mentioned in Shakspeare's Plays. With incidental Notices of the Entomology of Ireland. By Robert Patterson, Treasurer of the Natural History Society of Belfast. London: *Wm. S. Orr and Co.*, Paternoster-Row. 1838. 12mo. pp. 270.

If this volume was published with the view of proving Shakspeare to be a good entomologist, we must think the author has failed in his object. The mighty bard noticed Beetles flying abroad at dusk, and makes incidental mention of Flies, Earth-worms, &c., with which every one is presumed to be familiar. He had no title to the term "naturalist," because he knew only what the world in general had observed equally with himself. Some writers seem to imagine that unless they can prove Shakspeare's plays to testify an intimate acquaintance with every subject under the sun, they are of little worth. We think differently. At the same time, there can be no objection whatever to selecting any work, and describing the insects therein cursorily mentioned. On the contrary, if such a course will please the public, and attract fresh votaries to the temple of science, the plan has our sincere approbation. We may suggest that Thomson's admirable *Seasons* would form an excellent basis for such a volume. His observations on Natural History are frequent, accurate, and minute.

These *Letters* were read by the author, as papers, at the Belfast Natural History Society. They are supposed to be addressed by him to a Rev. friend in the country, with the view of inducing him to take an interest in Entomology. At p. 14, Mr. Patterson observes to his clerical correspondent:—"To you, who want occupation, the study would produce a different but equally beneficial result." What a satire upon our schools and Universities, that a clergyman, of all men in the world, should "want occupation"! But the picture is too true of a great proportion of those whose only claim to being well-educated consists in

having studied at Oxford or Cambridge. At p. 39 our author alludes to the "Blind-worm's *sting*," a mistake which may well be excused in him, as *Anguis fragilis* does not occur in Ireland. For a rectification of the vulgar error respecting the "sting" of this creature, see our Vol. III., p. 325. Mr. PATTERSON notices (p. 44), with just reprehension, the omission of scientific names, and the erroneous use of English technical terms, in some recent publications. Our readers will be able to appreciate the confusion thus engendered, if we cite the instance of a well-known and highly interesting volume, WATERTON'S *Wanderings in South America*.

The following, though not so characterised by the author, are manifestations of the faculty of Secretiveness :—

"I have often been amused, on taking the common Dor Beetle, at observing the manner in which it feigns death. Its legs are set out perfectly stiff and immoveable, which is its posture when really dead, and, no matter how much it is tossed about in the hand, it will not, by the slightest movement, betray its stratagem. The only way to restore its activity is to allow it to remain for a minute or two undisturbed. It is said by this procedure to deceive the Rooks, which feed upon it, but which do so only when their captive is alive. A curious example of a similar instinct in birds is given in *Time's Telescope* for 1833 :—'A gentleman had a Corn Crake brought to him by his Dog: it was dead to all appearance. As it lay on the ground he turned it over with his foot: he was convinced that it was dead; standing by, however, some time in silence, he suddenly saw it open one eye. He then took it up; its head fell, its legs hung loose, it appeared again totally dead. He then put it in his pocket, and before very long he felt it all alive, and struggling to escape. He took it out: it was as lifeless as before. He then laid it upon the ground, and retired to some distance; in about five minutes it warily raised its head, looking round, and decamped at full speed.' "—p. 72.

If by the often-cited passage—

> ——— "The poor Beetle that we tread upon
> In corporal sufferance finds a pang as great
> As when a giant dies,"

the poet intends to convey the opinion that the sensibility of an insect is as great as that of man, it will not stand the test of truth; but no doubt the true meaning of the lines is that the mere act of summarily depriving a man of life causes as little pain as a similar operation would do to an insect. The bard wishes, in fact, to express in a forcible manner the small amount of suffering caused in killing any animal, provided the proper means are employed.

Mr. PATTERSON incidentally states, at p. 83, that he has procured specimens of *Blethisa Borealis* and *Bembidium paludosum*, "insects which had not before been taken in this neighbourhood [Belfast], and which I believe had not previously been recorded as Irish." Alluding to a passage in "All's Well that Ends Well," our author says :—"HAZLITT was so well pleased with the passage, that, in his *Characters of Shakspeare's Plays*, he quotes the commencement of it, and remarks, with a note of admiration, 'What an exact knowledge of Natural History is here shown;' although every boy who has spent his summer holidays

in the country, is well acquainted with the 'bag o' the Bee.'" (p. 119.) Further on, we find the dramatist "adopting the *universal, though incorrect, opinion of his day*," in the line, referring to Bees—

"Our thighs are packed with wax."

A curious circumstance is stated at p. 132. A gentleman exported two stocked hives from Bristol to Waterford, in the summer of 1828. Next spring the English Bees were busily employed at work full a month before their Hibernian neighbours, in the same garden, had commenced. The following year they were earlier than the Irish Bees, but not so much so as the preceding season; and now no difference is to be observed in this particular.

Respecting honey-dew, we may quote the following:—

"Honey-dew, instead of being, as PLINY conjectures, the saliva of the stars, or a liquid produced by the purgation of the air, is a secretion deposited by a small insect, which is green upon the Rose-tree and black upon the Woodbine, and which entomologists distinguish by the generic name of *Aphis*. The liquid they deposit is perfectly pure, and rivals either honey or sugar in its sweetness. The Ants not only suck it up with eagerness, whenever it can be found, but they possess the art of making the *Aphides* yield it, by patting them gently with their antennæ; and one particular species of Ant is said to confine the *Aphides* in apartments constructed solely for that purpose, to supply them with food, to protect them from danger, and to take, in every respect, as much care of them as we should do of our milch cattle."—p. 145.

Dr. BEVAN states (*Treatise on the Honey Bee*, new edit., p. 71.) his belief that there are two kinds of honey-dew; the one a secretion from the surface of leaves, the other a deposition from the body of the *Aphis*.

In conclusion, we may express our opinion that SHAKSPEARE excelled not so much as an observant naturalist, as in the apt and striking similes and illustrations which he so well knew how to draw from facts generally known.

With the execution of Mr. PATTERSON's volume, as a popular treatise on the insects mentioned by SHAKSPEARE, we are much pleased; and the notices of the Entomology of Ireland will prove both interesting and valuable to the more advanced naturalist. The work is embellished—we will not exactly say illustrated—with numerous wood-cuts.

Illustrations of the Zoology of South Africa; consisting chiefly of Figures and Descriptions of the Objects of Natural History collected during an Expedition into the Interior of South Africa, in the years 1834, 5, and 6; fitted out by "The Cape of Good Hope Association for exploring Central Africa:" together with a Summary of African Zoology, and an Inquiry into the Geographical Ranges of Species in that Quarter of the Globe. By ANDREW SMITH, M.D., Surgeon to the Forces, and Director of the Expedition. Published under the Authority of the

Lords Commissioners of Her Majesty's Treasury. London: *Smith, Elder, & Co.*, Cornhill. 1838. No. i. 4to.

This is an important work, as its aim is to put the British naturalist in possession of the history of the unknown or imperfectly-described animals of a little-explored region replete with interest. It will be published in numbers, the insects being by Mr. Macleay, the rest of the animal kingdom by Dr. Smith. Government has granted a sum of money for exploring Central Africa, with an express view to this work. The same may be said of the *Fauna Borealis Americana*, by Dr. Richardson and Mr. Swainson, to which the present publication will, when completed, in all probability form a worthy companion. Ten species are figured, including quadrupeds, birds, fishes, and reptiles. The plates are lithographed by Messrs. Day and Haghe, and coloured. They are for the most part artistically executed, although we anticipate improvement in some points in future numbers. The accompanying descriptions are minute, and seem well drawn up. We shall return to this valuable work on receipt of the second part. For the present, let the ample "temporary title," transcribed above, suffice to impart all reasonable information respecting the nature of the undertaking.

Flora Abredonensis; comprehending a List of the Flowering Plants and Ferns found in the Neighbourhood of Aberdeen; with Remarks on the Climate, the Features of Vegetation, &c. &c. By George Dickie, A.M., M.R.C.S., F.B.S.E., &c. Aberdeen: *Gray and Smith; A. and C. Black*, Edinburgh; *Whittaker and Co.*, London. 1838. post 8vo. pp. 75.

The title-page explains the contents of the work, except in omitting to state that the particular localities of the rarer species are carefully noted. It is just what a local Flora ought to be in its plan, that is, short and of moderate price. These advantages are gained without the sacrifice of anything essential to such a work; the saving of type and paper, and consequent diminution of cost, being effected by the omission of descriptions and other matters found in all the general Floras of Britain. But we are sorry to observe one important defect, which might have been avoided by a very trifling addition to the cost of printing; viz., a notice of the usual time of flowering of each species in the tract of country to which the Flora relates. If the author was unable to state this from his own experience, then he has published his book before he was entitled to do so on the score of knowledge. If a botanist has explored a district sufficiently well to present an accurate list of its productions, he must know the months in which they are to be found in flower; and we hold this information to be an important item in a local Flora. Notwithstanding this one defect, we are glad to welcome

Mr. Dickie's book, as the only one hitherto published relating to any part of the North of Scotland, a tract of country less known botanically than any other portion of Britain, of the same extent. The *Northern Flora* of the late Dr. Murray might have supplied a desideratum to British botanists, had the author lived to complete it, although the expensive form in which it was published would certainly have greatly confined its circulation.

In the author's remarks concerning the climate of his district, we have a list of exotic plants, said to bear the open air at Penzance, in Cornwall; and those which will also survive the winters of Aberdeen are distinguished by Italic letters. Among these we have *Cyclamen Persicum*, *Azalea Indica*, and *Myrtus communis*—plants which we were not prepared to believe at all likely to bear the climate of any part of Scotland, through the year. The Myrtle, indeed, survives the winters of England, in situations where they are as cold as the winters of Aberdeen; but they are of shorter duration, whilst the greater heat and longer duration of summer enable the Myrtle to bear a lower temperature, by having its young wood thoroughly ripened the first season. The two former species are greenhouse plants almost throughout England, and we know by experiment that the first is very soon injured by frosts less intense than those of Aberdeen. We are also told that *Buddleia globosa*, *Fuchsia coccinea*, and *Hydrangea docolor (hortensis?)* "grow without protection during the whole year." This, we think, must be a mistake also. These species are killed to the ground by severe winters in England, although their roots will survive and shoot again in spring. Indeed it must be a very mild winter in which the Fuchsia is not killed to the ground. Possibly the author only meant to say that the roots *survived* the winter.

In contradiction to the opinion of Humboldt, adduced by Mr. Dickie, we can assure him that the *mean* temperature of the coldest month is by no means the principal point for consideration in determining the influence of winter on the vegetation of countries. The *minimum* of temperature, and the duration of low temperatures, or the period during which low temperatures occur at intervals are the most essential points. Plants are killed either by low temperatures which destroy their vitality, or by a protracted temperature so low as to prevent their vegetation, although not low enough to destroy them directly.

In looking over the list of species, we observed a few names which we should not have expected to find without the mark of doubtful nativity attached by Mr. Dickie to those species which he supposes to have been introduced by the hand of Man. Amongst these are *Carum carui*, *Anchusa sempervirens*, *Koniga maritima*, and *Melilotus officinalis*, which, it would seem, are more likely to have been introduced than either *Malva moschata* or *Arum maculatum*. The Koniga, indeed, our author does not appear to have seen at all; since he gives the *British Flora* as his authority, and Hooker took up the Aberdeen locality from Smith's

English Flora, into which the plant (or, at least, the Aberdeen locality) ought probably never to have been introduced.

We would suggest to Mr. DICKIE, that *Flora of Aberdeen* would have sounded quite as well, and have been a more sensible and less pedantic title, than *Flora Abredonensis*.

The volume is, by permission, inscribed to Dr. FLEMING.—H. C. W.

The Honey Bee, its Natural History, Physiology, and Management. By EDWARD BEVAN, M.D. London: *Van Voorst*, Paternoster-Row. 1838. post 8vo. pp. 458.

WE here have a new edition of Dr. BEVAN's well-known and ably-written treatise on the Honey Bee, inscribed to the QUEEN. The author draws a skilful parallel between Her Majesty and the queen Bee in his dedication. It is perhaps one of the best works in existence on this interesting subject.

A Treatise on Insects, general and systematic; being the Article "Entomology," from the seventh Edition of the *Encyclopædia Britannica*. With 540 Figures. By JAMES WILSON, F.R.S.E., M.W.S., &c. Edinburgh: *A. and C. Black; Whittaker & Co.*, London; *John Cumming*, Dublin. 1835. 4to. pp. 328.

ALTHOUGH this work was forwarded to us by the publishers a short time back, with the other treatises from the *Encyclopædia Britannica*, it bears too old a date to render a lengthened critique either desirable or expedient. We may, however, observe, that it appears to be well executed, and that the very numerous and excellent figures will be of essential service to the student. The scientific public, and the students of Entomology, have doubtless, long ere this, substantially testified their approbation of the work.

The Causes of Planetary Motion. With a Diagram. By JABEZ ALLIES, Esq. London: *William Edwards*, 12, Ave-Maria-Lane. 1838. 8vo. pamphlet. pp. 12.

WERE we to criticize these pages, we should be obliged to extend our observations to a greater length than we can well spare for a pamphlet, however able. We shall therefore content ourselves with expressing approbation at the style and manner of the treatise, and recommend it to the notice of those whose taste leads them to pursue this interesting question.

Proceedings of the Ashmolean Society, Nos. ii.—xi. 1833—6.

THESE reports, which are probably only intended for circulation among the

members of the Ashmolean Society, have been kindly forwarded to us by a friend. They are valuable; but we cannot attempt any abstract, which is the less necessary, as we from time to time publish reports of the more interesting papers read at the above institution. Through the attention of the same gentleman, we have likewise been afforded the perusal of several excellent treatises issued by the Society, but which bear too old a date to require criticism.

Farmers versus Rooks; or, the Substance of a Trial supposed to have taken place in Ayrshire, before a Committee of Gentlemen, appointed by the Agricultural Society of that County, to consider the supposed damage done by Rooks to their Tenantry. By JAMES STUART MENTEATH, Esq. Ayr: *M'Cormick and Carnie.* 1838. 8vo. pamphlet. pp. 27.

WE presume all our readers are fully convinced of the valuable services of the Rook, and that the injury it causes to the crops is exceedingly trifling; but we are very glad to find Mr. MENTEATH advocating its cause before the farmers in a remote part of the country, where the old prejudices are still strong among the tenantry. Our author refers to the opinions of many eminent and experienced naturalists on the subject. But who "*Mr. Benrick*, the celebrated naturalist," may be, seems a puzzle, until we are informed that he is "author of the well-known work on British Birds," THOMAS BEWICK. BLUMENBACH is cited as "*Mr. Blumenbach;*" and, lastly, we are informed that Mr. KNAPP is "the celebrated author of *The Naturalist*," *Journal of a Naturalist* being intended. Mr. MENTEATH is known to our readers as a correspondent of LOUDON'S Magazine, and also of this Journal; and his father, Sir CHARLES G. STUART MENTEATH (one of the "Coronation Baronets"), of Closeburn Hall, Dumfriesshire, is an eminent and highly-esteemed agriculturist in the south of Scotland.

We hope this pamphlet will be extensively circulated where it will be of mo s service.

LITERARY INTELLIGENCE.

Mr. YARRELL'S *History of British Birds* has reached the eighth part.—The first number of Prof. JONES'S *Outline of the Animal Kingdom* appeared Sept. 1.—Both these works, with several others, have come to hand.—Sir W. J. HOOKER has published a fourth edition of his *British Flora*, in which he has included numerous additional observations, and embellished the whole with six plates illustrative of the Grasses, &c. We would suggest the propriety of the plates being published separately, at a moderate price, for the convenience of purchasers of the earlier editions, as they are certainly an important addition to the work.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Floating Nests.—Many persons calling themselves naturalists question the assertion that aquatic birds ever build their nests upon the water. That some species habitually perform such a feat, we are convinced. But during the present summer we have witnessed a very striking instance of it respecting a bird which usually builds on the banks of Sedgy lakes, among Rushes, and in bushes—viz. the Common Gallinule (*Gallinula chloropus*). The nest alluded to floated on the water without having any attachment whatever with the islet which it adjoined; but was enclosed on all sides, by sticks, &c. Thus situated, the careful parents hatched their eggs in perfect safety, though, had the water risen to an unwonted height, the case might have been otherwise.—Ed.

Prejudice against the Blindworm (*Anguis fragilis*).—I am led to suppose, from Mr. Salmon's remarks (Vol. III., p. 325), that a prejudice against these inoffensive reptiles exists in his neighbourhood, similar to the belief prevalent in Lancashire. The notion of the lower orders here respecting this Snake is curious, and will be best shown by a conversation I once had with a turf-cutter:—"Well, my man, you have other kinds of Snakes here (Woolston Moss) besides the Viper?" "Aye, Sir, we sometimes light on Blindworms and Edders." "Indeed!" "Aye: but the Blindworms are the wo'st, and desperate hard to kill. Whoy, if you were to cut one into half a dozen pieces, they 'ud join together again!" A medical friend informs me that a belief in the power of separated parts of this Snake reuniting, is prevalent amongst the lower classes in Scotland. How can it have originated?—Peter Rylands, *Bewsey House, Warrington, Aug.* 10, 1838.

Mr. Gould's Expedition to Australia.—The bark *Parsee*, which took out Mr. and Mrs. Gould for Australia, was spoken with off Teneriffe, on the 10th of last month. The expedition upon which this distinguished naturalist is engaged, has excited much interest in the scientific world, as the work which he proposes to bring out on the Ornithology of Australia will be on the same magnificent scale as that on the birds of Europe; while nearly the whole of the illustrations will be of species previously unfigured. The execution of the illustrations to the *Birds of Europe* occupied the constant attention of Mrs. Gould from 1832 to 1838, and the amount subscribed for copies of this unrivalled work, amounted to £17,000.—*Athenæum, July* 21, 1838.

Occurrence of the Spoonbill near Tewkesbury.—A fine specimen of that rare bird, the Spoonbill (*Platalea leucorodia*, Linn.) was shot in a meadow on the banks of the Avon, near Tewkesbury, on the morning of Tuesday last.—Having been wounded in the breast, it dropped in a boat which was passing down

the river, and was taken up alive. It was purchased by Mr. Orme, of Tewkesbury, but as it appeared to be suffering greatly from the injury it had received, and could not retain food of any kind on its stomach, it was thought desirable to kill it. The bird was of full size, perfectly white, and its bill of the unusual length of nine inches.—*Bath Post, June* 23, 1838.

BOTANY.

Addenda to the "Leicestershire Flora" in Nos. viii. & ix of The Naturalist.—*Bromus arvensis;* near Twycross.—*Lolium arvense;* between Market Bosworth and Congerstone.—*Galium uliginosum;* the Park, Market Bosworth.—*Radiola millegrana;* Charnwood Forest, near the Reservoir.—*Gentiana campestris;* Charnwood Forest, near Thrinkstone.—*Anchusa sempervirens;* near Snarestone, below the church.—*Myosotis collina;* near Shenton.—*Lilium martagon;* naturalised in a copse between Osbaston and Market Bosworth.—*Epilobium angustifolium;* in a thicket on the left hand entering Bosworth Park from Hinckley.—*Polemonium cæruleum;* near Market Bosworth.—*Rubus macrophyllus;* near Congerstone.—*R. plicatus;* between Swepstone and Heather; also near Thrinkstone.—*R. rhamnifolius;* near Thrinkstone.—*Clematis vitalba;* near Wimeswold.—*Turritis glabra;* near Osbaston Bar.—*Sonchus asper;* common in gardens, quite distinct from *S. oleraceus.*—*Conyza squarrosa;* between Osbaston and Barleston.—*Euphorbia exigua;* common.

The following are additional habitats of plants previously included:—

Myosurus minimus; Congerstone Field.—*Atropa belladonna;* field near Staunton Harold.—*Viola palustris*; Scale Wood.—*Galanthus nivalis;* Gracedieu Wood.—*Carex strigosa;* adjoining the Park on the Sutton road, Market Bosworth.—*C. pallescens;* between Twycross and Bilstone.—*Equisetum hyemale*; in a plantation between Measham and Ashby-de-la-Zouch.

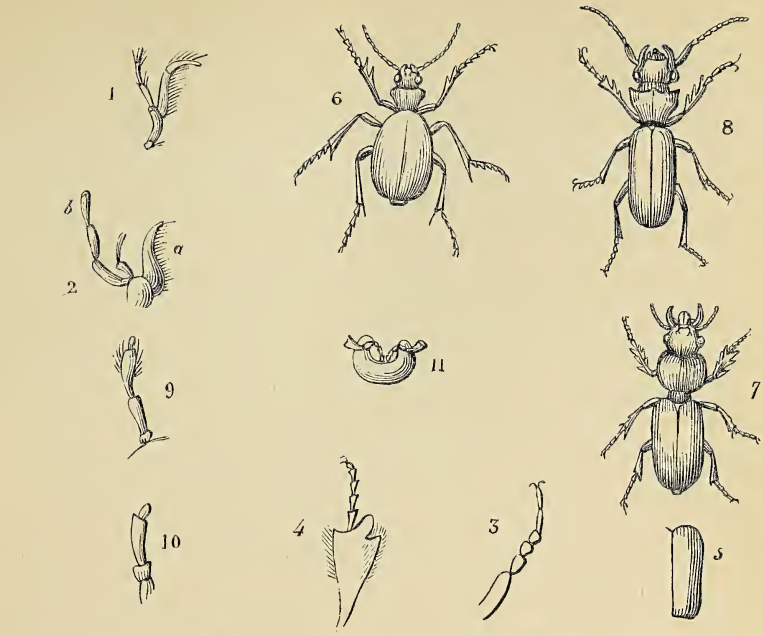
In the "Leicestershire Flora," Nos. viii. and ix., for "*Mount Bosworth*" read *Market Bosworth.*—Vol. II., p. 82, l. 9, for "*obtusifolius,*" *obtusiflorus.*—Andrew Bloxam, *Atherstone, Leicestershire, Aug.* 21, 1838.

Botanical Lectures at Rochdale.—John Roby, Esq., has just completed a course of ten lectures on Botany, illustrated by large diagrams, at Rochdale, Lancashire. There was likewise a number of paintings on glass, shown through a transparent screen. The object was to make Botany easy, pleasant, and familiar to a mixed assembly. If we may judge from the increasing and crowded audiences, the lecturer succeeded very admirably in rendering even this dry subject popular, and within the comprehension of all classes. The means were new. Mr. Roby had not another's experience to fall back upon; and he has reason to feel proud that at the last lecture the theatre was crammed to the very ceiling. We should be glad to find such lectures multiplying in the land.—Ed.

The Filiform Speedwell a British Plant.—During the past month a plant, hitherto unknown as a native of Britain, was found in the neighbourhood of Colchester, where a number of specimens have been gathered. This flower, the Filiform Speedwell (*Veronica filiformis*), is a native of the Levant, and was introduced into England in 1780. The blossoms are of a pale blue colour, on long slender flower-stalks, and it partakes of the habit of the common Germanders (*V. chamædrys* and *V. arvensis*). The situation in which it was found clearly proved that it was of spontaneous growth, and the discovery is a truly valuable addition to the British Flora.—*Essex Literary Standard, as quoted in Sheffield Chronicle, Aug.* 1838.

OBITUARY.

The death of the Chevalier Frederic Cuvier (the news of which reached us some time ago) has awakened the deepest regret among a numerous circle of friends and savans. This excellent man was on his return to Paris, from one of those annual journies which his office of Inspector General to the University obliged him to make, and was seized with paralysis, at Strasbourg; the alleviation is contained in the reflection, that he was surrounded by friends and the best medical aid, but neither affection nor skill could avail, and in four days he was no more. He was born at Montbeliard, in 1773, was called to Paris by his illustrious brother, Baron George Cuvier, and became keeper of the menagerie at the *Jardin des Plantes* in 1804, a place which enabled him to make some valuable observations on the economy and physiology of animals. These are published in the *Annales du Muséum*, and, with other excellent works on Natural History, led to his election into the Academy of Sciences, to the Inspector Generalship of the University, to the Legion of Honour, to the Royal Society of London, and lastly, to the chair of Comparative Physiology at the *Jardin des Plantes*. A remarkable coincidence exists between his death and that of his brother; like him, he was about to deliver a fresh course of lectures, was attacked by paralysis, was aware from the first moment of the result which must ensue, was anxious to secure the welfare of others, was patient under severe sufferings, and was ready to meet his God. As a scientific man his loss will be severely felt, for not only did he write the above-mentioned works, but was a contributor to several of the journals of science, and the principal labourer in the *Histoire des Mammifères* published in conjunction with M. Geoffroy St. Hilaire. As a father, a friend, and a brother to the bereaved widow who is thus again visited by heavy calamity, his loss is irreparable; and as a master, the very quadrupeds of the *Jardin* will feel the loss of his benevolent care. M. Cuvier has left a son, who bears his noble name with honour.—*Correspondent of the Athenæum, Sept.* 8, 1838.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THE NATURALIST.

VOL. IV., NO. XXVI.—NOVEMBER, 1838.

LOCAL OCCURRENCES IN NATURAL HISTORY;

PRINCIPALLY RELATING TO THE BANKS OF THE SEVERN, AND THE WESTERN DISTRICT OF WORCESTERSHIRE.

In Letters to Neville Wood, Esq.

BY EDWIN LEES, F.L.S.

LETTER I.

"*Quæ circumvolitas agilis Thyma?*"

HORACE, *Ep.* iii., 21.

MY DEAR SIR,—I took the liberty, in two papers published in THE NATURALIST (Vol. III., pp. 115 and 291), under your spirited and talented auspices, to throw out a few suggestions respecting the supposed popularity of Natural History considered as a study. I also pointed out that aspect under which the subject, in my opinion, really assumed a "popular" garb, when, without being merely superficial, the ever-interesting appearances going on in the great theatre of Nature, are brought out before the public view, correctly stated and detailed—without an unnecessary and alarming array of technical battalia—interspersed with incident, and spiced with poetical imagery. I am not aware that the correctness of these views has been disputed, and the inference is, that the multitude are to be enlisted under the banners of Natural History by authors who will condescend to stoop from their high eminence, whether as observers or systematists, and address, not professors but students.

I am quite aware, and perfectly ready to admit, that the anatomist or monographer who writes in a language that secures him only learned readers or indicates discoveries in the dim obscurity of terminological lamp-light, appreciable only by his initiated brethren of the modern Babel, too familiar with nomenclature hoarse and portentous as "the roarings of the forest of Garganus,"* in effect enlarges the boundaries of knowledge; but I contend that his labours are imperfect, and comparatively useless, until he meets with an interpreter and commentator

* "*Garganum mugire putes nemus, aut mare Tuscum.*"—HOR., *Ep.* i., 202.

to extend the narrow limits within which he lay immured in solemn dignity. Such an author is like a lake imprisoned within frowning rocks of hideous aspect, far from the hum of men, retaining indeed the pure element as distilled by the clouds down the asperities of the slippery ravine; but splashing its sullen and useless waters upon the barren stones, unseen in its shadowy concavity but by the momentary wanderer on the mountains, undrank even by the nomadic gipsy or sauntering shepherd—and wreathed for months within the invisible folds of a monotonous fog. But should art or accident pierce the barrier that held the waters in their silent unfrequented hold, or should continual percolation at length work a passage for the immured fountain, at once graceful, active, and useful, its sprightly intonations resound through the glens, as amid Birchen bowers and Hazel groves it hastens into the level country, flocks drink and rejoice in its cooling influence;—the herds wade and rest among its Sedges and Lilies,—the roar of the water-wheel and wier tells of its subjection to the husbandmen of the vales,—and now with expansive breast and brimful stream, the boat and barge navigate its curls and reaches, and the hum of commerce and the bustle of business murmur along its banks, till, as the tidal wave mounts in majesty upon its surface, a forest of masts and brilliant waving pennons proclaim its union with the ocean, and its vast importance to the interests of mankind in general, as a grand and imposing artery of communication with the interior country. So, comparing physical with moral effects, we may not unaptly estimate the *results* of the labours of a popular writer, in comparison with those of a scientific but abstruse one.

Let me not for a moment be supposed to undervalue the labours of the zealous cultivator of scientific knowledge, or to insinuate that the labours of the systematic adept must not always occupy a higher rank in literature than those of the paraphrist or elucidator only; I do not deny it, but I think the *original observer* may in general prove more eminently *useful* to his compeers by clothing his observations in familiar language, rather than by limiting the extent of his arena to the narrow circle of his own scientific "order," by the too exclusive use of technicalities and formulæ. This suggestion appears to me to be fully borne out by the observations of Mr. Swainson in his *Treatise on the Geography and Classification of Animals;* for while the fabrication of the new polyglot insect groups and repulsively-intricate system of Fabricius, are said to have "*retarded*" the progress of entomological science,* Gilbert White's plain but interesting records are justly lauded and recommended to every lover of Nature, as it is asserted that "some of the most important truths of ornithological science are mainly supported by the simple and apparently trivial facts detailed in his interesting book."†

* Swainson's *Geog. and Class. of Animals*, in Lardner's *Cab. Cyclop.*, p. 190. † *Ibid.*, p. 310.

A similar meed of praise is awarded to "the intellectual author of that charming volume the *Journal of a Naturalist*" (by Mr. KNAPP), which Mr. SWAINSON justly observes "should be in the hands of every lover of Nature, no less than on the shelf of every philosophic zoologist."* One very great advantage of books of this class is, that they leave the prickly and repulsive armature of scientific verbiage behind them: and as even on the Holly-tree the apparently spinous foliage is only harsh on the exterior, so Natural History, exhibited in its varied details, as falling under the eye of common observation, claims the attention as well of the mere searcher for amusement as of the initiated professor who seeks for illustrations to his theoretical views. In this aspect, although a royal road to knowledge may not be laid down along the asperities of the way to the adytum of Nature, yet the doors of the ante-chapel are thrown open so wide as to invite all observers, and to increase in all probability the number of worshippers at her shrine. The numerous editions of WHITE's *Selborne* incontestably prove the general interest that local facts respecting the denizens of the fields, groves, and gardens inspire; and yet how very few persons have followed in the track here indicated, at least so as to bring their labours before the public, except perhaps in the way of catalogues in the periodicals, which, however useful in themselves, fail to produce that charm which arises from the development of facts, with the pleasing accompaniment of imagery and incident.† The catalogue is, of course, the basis of description, as the skeleton is of the body; but although the anatomist may require the one, and the historian or condenser the other, yet the general reader and inquirer prefers a connected chain of remark in the one case, and rather feels inclined to shrink from the "raw-head and bloody-bones" in the other. I conceive that the presentation of an *allurement* to the study of any science, is both a justifiable and a legitimate mode of procedure; but at the same time I shall not assert that a walk in the fields, or a superficial glance at the *Journal of a Naturalist*, constitutes one at once, full-armed like MINERVA from JUPITER's brain; but surely, if a neophyte only has been enlisted in the cause, some advantage must be gained to science, if it only adds another contributor to the very inadequate remuneration the real scientific labourer receives for his expenditure of time and talent.

It is my intention, therefore, in connection with these remarks, to trace a few

* SWAINSON, 209.

† No doubt the paucity of local details similar to WHITE's arises from the diffidence that many naturalists feel to publish seemingly trivial facts connected with their own neighbourhoods, lest it should be thought they have nothing else to do, or their friends should take the alarm that they are misemploying their time! The fact positively is, that in the *country* an occupation unconnected with the *pot* or the *spit* is looked upon with amazement—a man may stump about with a gun or a rod and line for weeks in some estimation, let his luck be what it may—but, *certes*, he tumbles below zero at once if caught in a Duck-pond hooking out a *Lemna* or a *Callitriche*.

"local occurrences in Natural History" that have fallen under my notice in the district mentioned at the head of this paper, in a familiar and if possible "popular" way; by which I mean not a mere cursory or superficial view, but an examination so conducted, in non-technical language, of the objects presented in succession to the notice of the reader, as to be intelligible to all who have enjoyed the benefit of a common English education. My object, therefore, will not be to scare away the general reader, from the supposition that I am only writing for the professor or the adept.

In early youth I was attracted by the *Natural History of the English Counties*, by Martin, a clever man in his day,* which I stumbled upon in a school library; and, meagre and defective as his statements then necessarily were, I felt a charm about them which often induced me to think that some day I would take an opportunity of examining facts of this kind in connection with the district in which I might happen to reside. The monthly calendar I used then occasionally to see in *Time's Telescope*, and some other periodicals, gave me a fillip of the same kind; and when after many a pore over the well-known *Description of Three-Hundred Animals*, not forgetting the Griffins, Basilisks, and Unicorns that graced the appendix, I was at last enabled to become master of Bewick's *Birds*, I seized my memorandum-book and began at once, all ardour and zeal, to journalize the sight of every Tom-tit or Squirrel that came within my ken. Time, the never-failing corrector of all out-breaks, cooled down this fervour, but left in its place a calm settled love for the charms of out-door observation, which domestic afflictions and the effect of peculiar circumstances on a nervous frame, only bound the closer to me, as a balm for every wound.

I had been some years domiciled in Worcester and its vicinity, still attentive to the adjuncts of the beautiful scenery around, when an opportunity presented itself of combining my efforts with some enterprising friends in forming a Natural History Society there. In accordance with their wishes and my own inclinations, I became the first Honorary Curator to the Society; and, whatever may have been the exertions of others, did my best, *con amore*, to further its interests.† It would be tedious here to advert to the efforts of other gentlemen, particularly as the Reports of past years have detailed them, and it is only necessary to state that the public responded heartily to the call made upon them to support the new Institution thus created. Of course I considered that various facts I had collected on the Natural History of Worcestershire would now prove useful, and I searched for more, under the impression that local occurrences of this nature

* Remembered now, I believe, only as a mathematician, though he wrote on various philosophical subjects—but later writers have "superseded" *him*, as in the roll of events they will us also.

† A Lecture on the Analogies and Associations of Man with Plants and Animals was (among other Lectures) delivered by me to the Society, and published in 8vo., by Edwards, London.

would form a valuable fund for occasional contributions to the "Transactions" which I could have wished the Society to publish. The Council, however, having never embarked upon such an enterprize while I continued among them, my materials have remained in a great degree undisposed of, with the exception of such as I have communicated to Dr. Hastings for the enlargement of his lecture illustrative of the Natural History of Worcestershire, delivered before the Society in 1833.* Although, therefore, I was disappointed in this respect, and although, from other circumstances, my official connection with the Society I had assisted to found has terminated, I have not altogether lost sight of the object I originally contemplated. I have indeed removed lower down the vale of Severn, but still occupy a position on its western banks; and though not now actually in the strictly legal limits of Worcestershire, I reside on a tract of Gloucestershire dove-tailed within it, and thus still have my old-father county on three sides of me.

> "Shall old acquaintance be forgot,
> And *never* brought to mind?"

No, indeed, my powers of thought and memory are not yet quite extinct.

I have only intruded these personal particulars to "show cause" why I venture to describe any local occurrences at all in the district I have indicated. If any one chooses to dispute the ground with me, let him be prepared to shiver a good stout lance; and if not, then I presume I shall stand excused for the employment of my humble materials, even if ultimately they should only prove a collection from which others may elaborate a more perfect structure. I care not who extracts from me for any object they may entertain, if they will only at the same time acknowledge the source of their information. I intend to proceed with my "local occurrences" in the following order:—

I. Present Aspect of the District, with Geological Facts and Inferences.

II. Rivers, Streams, and Marshes, with reference to Meteorological phenomena.

III. Plants and trees—their habitats, Influences, and Peculiarities.

IV. Facts and Occurrences relative to the History and Appearances of the Indigenous Animals.

Dyer, whose poem of *The Fleece*, marks him at any rate as a very faithful observer, has called the vale of Severn "Nature's Garden wide," in allusion to its fertility and beauty; and whoever, under the influence of a bright sun and clear sky, has traced the country from the Severn to the purple ridges of Malvern, and marked the wild hedge Roses trailing abundantly from the luxuriant hedges, the festooning Hops dangling from their array of poles, the picturesque sweep of the

* See Hastings, *Illust. of Nat. Hist. Worcest.*, 8vo., Pref., pp. 69, 97, 99, &c., and Appendix, c.

Pear-trees loaded with their green bunches, contrasted with the autumnal scarlet of their foliage, and the splendour of the Apple-orchards—

"red as evening sky"—*

while, to diversify the scene, the silvery Willows dance their foliage bright with argent pubescence above the green softly-stealing waters of the Teme, as they wind on to the embrace of the Severn, can hardly fail to acknowledge the correctness of the expression. But the naturalist who catches a glimpse of the "solemnly vast" steeps of Malvern, bounding the vale as with a great backbone, will be excited to examine the landscape with other views than those of the lover of romantic scenery. He sees the protruding bones of his parent earth, and as the rolling vapours veil them in the sombre gloom, he considers in idea the period when some eruptive force heaved them up in air, fracturing previously-deposited strata, amidst convulsive uproar, and the turmoil of the retiring and baffled ocean, with deep curiosity, and is stimulated by the vastness of the apparent catastrophe, to an untiring attention to the phenomena before him.

Any eminence in the immediate vicinity of Worcester, up the course of the Severn to Areley, on the borders of Bewdley Forest, or down its stream to Deerhurst, below Tewkesbury—within which points I purpose confining myself —offers to view in the landscape round many points of high geological interest. The Severn taking its course almost entirely through the New Red Sandstone, displays the singular brick-red colour of that formation wherever a precipitous cliff is uncovered by the action of the currents; but this bareness of exposure is invariably softened by the festooning thickets that invest the summits of these natural prætoria. In the mid-landscape the protuberant hills of the Old Storrage, Ankercline, Woodbury and Abberley, mark the belt of Limestone and Conglomerate that, under the recent name of the "Silurian System,"† passes across the country obliquely from N.E. to S.W.; beyond this, to the westward, peer the Old-Red-Sandstone hills of Herefordshire, while in the north-west the majestic twin Clees of Salop, crowned with their Basaltic "Giant's Chair," point out the Coal formation in that quarter, and in connection with the Quartzose ramparts of the Steiper Stones, and the rugged Acropoli of Caer Caradoc and the Wrekin, suggest topics for important and curious reflection. Turning eastward (though out of the scope of my particular scrutiny), the Oolitic outlyer of Bredon Hill forms a fine feature in the scenery, sloping gently down from its escarpment in an inclined plane towards the Cotswold ridge, from which it seems to have been separated; while from its base a curvilinear belt of gentle eminences,

* Chatterton.

† An appellation given by Mr. Murchison from the ancient British tribe of the *Silures*, through whose country these rocks take their course.

breasting the Red-Sandstone, points out the course of the Lias to the termination of its invading promontory. In the north-east the swell of the Upper Lickey hides the adjacent singular Camel-backed Quartz hills and transverse vallies of the Lower Lickey, with their broken Limestones and Coal,* all black and dreary with a dense over-growth of Heaths. Still farther north the rounded Trappoid summits of the Clent hills appear, and at their termination a volcanic cloud conceals by day and points out by its portentous flash at night the position of Dudley Castle on its Limestone crag, a fit residence for some iron chieftain shrouded amidst steam and smoke, the clang of the modern Cyclops, and within view of the black Basaltic creations of the ancient.† Turning for relief to the glorious aspect of the south-west, the Malvern chain is there seen raising its stair-like summit in bold and magical perspective far along the horizon, the Syenitic rocks of its transverse vallies courting the last beams of the descending sun, and offering new and varying features to the eye, as its level rays are intercepted or not by the purple clouds preparing to descend upon the vacated track of the retiring sun.

In commenting upon the Geology of this district, I prefer, by first considering existing actions, to move back upon the past, thus proceeding from the known to the unknown, rather than by empirically seizing upon a position among the fragments of the past, attempt to carve out a vista to the future, and thus attempt to account for existing appearances.

Without presuming to concoct any startling hypotheses, I think there can be no objection to considering the tract of country I have marked out under at least three distinct aspects.

i. Its present physical appearance and governing energies.

ii. The state of it when former causes, now slumbering or extinct, exerted their domination.

iii. The antecedent period.

It is evident that there must have been a commencement to the exercise o those forces whose action has determined the present physical features of the country. There must have been a period when the Severn, now the great artery and irrigator of the vale, had not commenced its flow from the Cambrian mountains. There must, among the hoary records of time, exist some memento of that past action which has scattered over the surface of the Red Marl such immense deposits of what is generally denominated "Diluvial Gravel;" and not only so, but has mixed up in the indurated Sandstone itself beds of rounded pebbles that

* See Dr. Buckland's excellent description of the Lower Lickey in the *Geological Transactions*, Vol I.

† The Rowley-Regis hills adjoining, some of which are columnar.

must have been free to the action of the water long before the hard nidus in which they are now confined was agglutinated and consolidated. Such pebbles in their fresh state we now only see along the beds and borders of rapid rivers, or chafed harshly by the boiling surge along the margin of the mighty ocean. Yet upon the Diluvial Gravel above mentioned a great part of the city of Worcester is built; orchards and harvests now wave upon the older pebbles generally called Conglomerate; though they incontestably prove their former subjection to the powerful trituration of moving water. We are thus led to infer that a change has come upon the things we view, and that it is impossible but that some earth-shaking power has at a distant period so moulded and modified the face of the country, as to give scope to the agents of vitality to impress upon its outline features entirely distinct from its pristine appearance.

When I say a distant period, I speak by the measurement of human annals. A century is a mere iota of numeration in the eternity of the past—a speck of which a cluster would be but as a grain of sand when compared with the universe—and yet to Man it is an important period. By it he measures the courses of his planet's revolution about the sun—within its boundary the term of all his joys and sorrows is, except in very rare cases, comprised—empires rise and fall, and cities, once eminent for splendour, are extinguished for ever all within its narrow compass. But when we attempt to apply this admeasurement to the operations of Nature, it is found wholly unavailable. For if we call upon the rivers to supply some tangible evidence as to the momentum of their streams in eroding their banks and laying bare their cliffs, so slow appears to be their excavating power, that the limits of memory are unable to supply any satisfactory data, and if we appeal to the hills, they only show on their indented acclivities trenches and fosses respecting whose date, although the works of Man, in the dim obscurity of ages, even the antiquary is uncertain. But it is apparent that the enormous masses of Gravel that gird as with an external rind the formations beneath, can be due to no exertion of the agents, whether of air or water, now exercising their influences upon the face of the country; their puny efforts may cause devastation among the creations of Man—may overwhelm his crops, inundate his fields, or sweep away his bridges—but the features of Nature remain undisturbed as previous to the partial oscillations of the storms and floods. Even traditional records are here at least silent as to any *general* perturbation of the land that could have been productive of effects so wide-spreading, and a few local landslips, such as that of a portion of Bredon Hill in the last century, or the celebrated movement of Marclay Hill in Herefordshire, is all that history records on the subject. Yet mankind are not forgetful to record those extraordinary calamities that bring trial and bereavement about the domestic hearth—we

perceive brass plates on the walls near the river, recording the height of former inundations, and the great flood of 1484, when, according to HOLLINSHED, children in cradles swarmed about the fields, and when

> "By sudden floods and falls of waters
> BUCKINGHAM'S army was dispers'd and scatter'd,
> And he himself wander'd away alone,"

was for a century afterwards termed "BUCKINGHAM'S Water." But all these swellings of the vale have made no perceptible alteration in its character,* or effected more than the rooting up of a few trees, or a partial erosion of soil—a more powerful agent, then, must have operated to have scattered the heaps of Gravel that every where appear in the vallies, forming in many places cairns of burial for animals now and for ages unknown as living denizens of the country.

I shall enumerate four kinds of Gravelly detritus occurring in the field of observation I have taken, whose origin is distinct, and which separately merit notice.

The first is the angular Syenitic Gravel which occurs in great quantities all along the eastern base of the Malvern chain, and effectually conceals the junction of the Syenitic rocks with the Red Marl. Gravel-pits are opened in various spots along the chace, from which it is carted away. This being derivable immediately from the rocks above, may perhaps be more correctly designated as *debris*. It is, however, of ancient date, being covered over by vegetable soil, and a turf on which Sheep have grazed for many centuries. It probably indicates a greater altitude to the Malvern Hills in bye-gone periods, than they now possess. No fossils of any kind appear in this Gravel.

The second kind is the Gravel of universal occurrence which has been usually called "*diluvium*;" alternating with veins of Sand, it invests the level country as with a rind, and scatters its loosened pebbles even upon the minor hills. It occurs of all intermediate sizes from that of a full puff-ball to the minutest grain; but in this district no masses occur of sufficient magnitude to be termed boulders. It lies generally in extended beds of various-sized pebbles, often with intervening

* Perhaps the slight earthquake by which the course of the Severn was changed near Buildwas, in Shropshire, on the 27th of May, 1773, may be considered an exception. As a local phenomenon, certainly, it was remarkable, though hardly to be considered as a movement affecting the geological features of the country on a grand scale. It may, however, serve to account for isolated disturbances sometimes discernible. It appears that early in the morning of the day mentioned, when the air was perfectly calm, the earth commenced heaving and the trees waving as if shaken by a power blast, when all at once eighteen acres of land, on which was an Oak wood of lofty trees, hedges, barns, &c., moved with great velocity, and precipitated themselves into the Severn, then overflowing its banks, and choaked up the channel. The stream became dry below, while above a mass of water was hurried, which, returning, formed a new navigable channel in a few hours three hundred yards long over a large meadow.

bands of Sand of considerable thickness, and occasionally interspersed with Carbonaceous veins which seem the result of the decay of some ligneous matters accidentally dispersed with the Gravel. The depth of this Gravelly deposit varies from eight to sixteen feet, and I believe no where exceeds eighteen. Its comparative antiquity is obvious from its employment in the mounts and embankments of old earthworks and donjons, as at Worcester; and in the vicinity of the Roman camp at Kempsey, four miles south of Worcester, the sepulchral cysts containing the urns and ashes of the deceased soldiers are formed in the partially-consolidated Gravel. In many instances the Gravel has fallen in upon the cysts, and broken the urns. A few years ago I remember Captain Smith, of Kempsey, bringing to me a Copper fibula of a Roman or Auxiliary which had been found among this Gravel, suggesting a train of curious reflection, and I have since seen many broken urns, which Mr. Jabez Allies,* of Worcester, had obtained from the same spot by favour of the former gentleman, on whose land the Gravel-pit is worked. But the most remarkable fact attendant upon these Gravel-beds, is the circumstance of the fossil bones and teeth of several large quadrupeds being found in them, which were never known to have inhabited this country, at least during any period to which history or tradition can reach, while where the Gravel comes in contact with the Red Marl at the bottom of the beds, the research of my learned friend Mr. Jabez Allies has recently brought to light the existence of *marine shells of modern genera and species*, some of which, where the Gravel was moist, were in as perfect a state as if just taken from the margin of the ocean. This latter occurrence has justly excited considerable surprise among geologists. I have seen some very perfect teeth of the Rhinoceros from Fleet's Bank, near Sandlin, as well as molars of the Elephant from this spot and the Gravel-beds at Powick, west of the Severn; and bones of various other animals have been found, which I believe may be seen in the Museum of the Natural History Society at Worcester. Mr. Hugh Strickland presented to the same collection some bones and tusks of the Hippopotamus found in a Gravelly mass at Cropthorne; these were in company with fresh-water shells still occurring in the present day, which seems to give them a character different to those of the Gravel westward of the Severn, where no fresh-water shells occur. Mr. Allies, in his work on the Old Red Sandstone, mentions the bones of the Cow, Sheep, and Dog, as being grouped together in one Gravel-bed at Powick, from which he infers (though surely erroneously), that "this county was not only inhabited by such animals, but also by Man, *before* the flood, and that it was considerably advanced in civilization."† Bones of *domestic animals* must,

* *The Analyst* for April 1836, contains a paper by Mr. Allies on the "Roman Antiquities discovered in Worcestershire."

† Allies *On Curious Indentations in Old Red Sandstone*, 8vo., p. 36. Edwards, London.

however, be looked upon with very suspicious eyes in such deposits, especially where, as in this instance, they approximate to Roman or British places of burial, since they may have been slain there for the uses of the camp, or killed and buried, as was usual at the funeral of a great chieftain. The same objection of course cannot apply to the Rhinoceroses, Elephants, and Hippopotami; and though these have been suggested to belong to former denizens of the country, I think that probabilities are against it.

Should the utilitarian feel disposed to smile at this geological bone-grubbing, I will just mention an anecdote which shows that it may at any rate be turned to *some* account, though, as I do not profess to be an indicator of final causes, I shall not contend that it was ever intended that the bones of noble animals should come to be used for such "base purposes" at last. My friend Mr. ALLIES, whose diligence in investigation is almost unequalled, and is only rivalled by the ingenuity of his hypotheses,* some months since requested the workmen at Fleet's Bank to reserve for him all the bones they might dis-inter at that famous animal mausoleum, and a considerable quantity were amassed, pregnant with scientific lore and learned disquisition—but alas! when my friend went for the treasure which was to freight his boat with immortality, he learned, to his unutterable dismay, from a hind—pale, ghastly, and affrighted as the wretch who undrew PRIAM's curtains to tell him of the conflagration of Troy—that some demon in the shape of a *ragman* had passed by the previous day, and, in the absence of the workmen, had captured and bagged (or rather "*boned*") the whole antediluvian treasure!

> "Sad PHILOMEL thus—but let similes drop,
> And now that I think on't, the story may stop."†

However, in all probability, these "organic remains of a former world," sold by the ragman, and ground down with a mass of others, if not served up on the breakfast-table with the miscellaneous ingredients that go, it is said, into the composition of our modern bakers' loaves;—may at least, used in the manufacture of earthenware and china, assist to form a dinner or tea-service, and thus we may make our libations from the metamorphosed jaws of a Hyæna or Rhinoceros, or dine unconsciously upon the re-organized ribs of "pre-adamite" Elephants, as we are already lighted at our public banquets from the treasured stores of a gas, which, once revelling in the atmosphere that surrounded a new-born globe, has since lain imprisoned, like the Genii of Eastern fable, for thousands of years

*See his explanation of the "tracks" in the Old Red Sandstone, supposed to be those of Horses, in the treatise before referred to; as well as his recent brochure *On the Causes of Planetary Motion*, in which he explains a curious experiment.

† GOLDSMITH's *Retaliation*.

in its dark dungeon, till once more set at liberty for new enterprizes and new adventures.

I shall resume the further consideration of the Gravel-beds in my next letter.

I am, my dear Sir,

Yours faithfully,

Forthampton, near Tewkesbury, E. L.

Sept. 16, 1838.

ON THE TOES OF THE AFRICAN OSTRICH, AND THE NUMBER OF PHALANGES ON THE TOES OF OTHER BIRDS.*

By Thomas Allis,

Curator of the Yorkshire Philosophical Society.

Two years since, when on a visit in Bristol, I was told by several of my scientific friends of that city, that Dr. Riley (who, I believe, was Lecturer on Comparative Anatomy to the Bristol Medical School) had discovered a third but rudimentary toe in the foot of the African Ostrich. I do not know whether the subject was ever made public in any scientific work; but I think I saw it announced in one of the Bristol papers; and I have heard it adverted to in London and other places. I confess I was not a little surprised at this information, as I had already mounted two skeletons of the African Ostrich, without observing any such toe. In one instance, the bones were taken from the skin before they came into my possession, and as I found that skeleton imperfect in another particular, I did not place much dependence on that; in the other specimen, the skeleton of which I took carefully from the skin myself, I certainly did not look expressly for a third toe, never having heard of, or suspected the existence of such a member; and, therefore, though I doubted the correctness of what I heard, yet I did not feel in a condition to contradict it.

Among Mammalia we have animals with only two or three external toes, which have rudimentary toes concealed beneath the skin; but when this is the case, we find articulatory processes for the attachment of these internal and rudimentary toes. On my return home, I minutely examined my skeletons, to see if I could discover any process to which this newly-described toe could by any possibility be articulated; but my search was vain, and my doubts of its existence were consequently increased.

* Read at the Newcastle Meeting of the British Association; and communicated to this Journal, through Mr. Edwin Lankester, by the author.—Ed.

Within the last fortnight, I have procured another Ostrich, for the express purpose of satisfying myself on the point; and in this instance, though I dissected the skin and tendons most carefully from the bone, my search was equally vain; and I am now prepared to assert, that whatever rudimentary toe may have been discovered in Dr. Riley's Ostrich, there was certainly no third toe in my own; before I took off the skin, I could feel most distinctly that there was nothing like a rudimentary toe on the inside of the foot; and this may be seen by any one who examines attentively the foot of a living Ostrich. It will be observed, that the skin lies so closely to the bone, that there is no possibility of a toe being articulated there; and yet, that is the only situation in which one ought to be found, or would be found, if it existed at all. Cuvier, speaking of the number of phalanges in the toes of birds, says* :—"those that have four toes, have the number and order of the phalanges as follows, 2, 3, 4, and 5."

Among those that have only three toes, the Cassowary has them thus disposed, 4, 4, 4. "The rest have them thus, 3, 4, 5. The Ostrich, which has only two toes, has four in each."

To this may be added, that where there are four toes, and the full number of phalanges, the hallux, or hind toe, always has two phalanges, the inner toe three, the middle, four, and the outer, five; and the same arrangement takes place with respect to the situation and number of the phalanges of the front toes, where there are only three; the outer toe has always the greatest number of phalanges when there is a difference in number, except that, in the Scansorial birds (which, on account of their climbing habits, have two toes in front and two behind), the articulatory process, for the attachment of the outer toe, is turned backwards; and in that case, the outer *hind* toe is the one with the greatest number of phalanges.

But I am at issue with Cuvier as to the number of phalanges, both in the Ostrich and the Cassowary;† in my specimens the phalanges increase in number regularly, as in all other birds I have examined, with two exceptions only; the phalanges in my Cassowary are three, four, and five; in the Ostrich four and five; as the number of phalanges clearly indicates that it is the middle and outer toe with which the Ostrich is furnished, had there been another it must necessarily have been in the inside of the foot; for it would be perfectly absurd to suppose that Nature, in her abhorrence at one deviation from her accustomed laws, attempted to cure that by committing another, which would unquestionably be

* *Comparative Anatomy*, English Translation, Vol. I., page 411.

† He makes these two birds exceptions to the general law of Nature, as to the number of phalanges. I agree with him as to the number of exceptions, but not as to the birds which constitute these exceptions.

the case, if a toe with a small number of phalanges was placed on the outside of one having a greater number.

In the wings of the Cassowary and Emeu, which are less developed than in any other bird except the Apteryx, we find a smaller number of bones than in the wings of those birds which use that organ for the purpose of flight; it is, therefore, only consistent with sound analogy, to expect a smaller number of phalanges in the toes of those birds which make the least use of them; and *Caprimulgus* [the Nightjar.—Ed.], which uses its feet less than most birds, which never perches, but when it alights on the branch of a tree merely rests on its surface, with its body in a parallel line with the branch on which it stands, has one phalanx less on the outer toe than any other bird I have met with, except the Swift, the outer and middle toe having four phalanges each. The Swift, which uses its toes in a still less degreee, and I believe in a less degree than any other bird, while its powers of flight are developed to a very extraordinary extent, has the usual number of phalanges in the hallux, and only three in each of the other toes. It is remarkable that the little Humming-bird, which has smaller feet than almost any other bird in proportion to its size, whilst its powers of flight are developed in a still more extraordinary degree than in the Swift (the pectoral muscles of a bird weighing only seventy-five grains, exceeding in thickness those of the Ostrich, which weighs fourteen stone, and equalling the corresponding muscles in man), should, from its being a perching bird, have its tiny feet developed, as far as regards the number of phalanges, to the same extent as all other perching birds.

Any gentleman passing through York may satisfy himself of the correctness of my statements as regards the Struthious skeletons, by inspecting them at the museum of the Yorkshire Philosophical Society in that city.

NOTES ON THE DOMESTIC HABITS OF THE DORMOUSE.

By Richard Pigott.

Having just now an opportunity of a free conveyance of a letter to town, I am induced to send you a few further observations that I have been enabled to make on the domestic habits of the Dormouse (*Myoxus avellanarius*), one of which I have had in my possession since December last (see Vol. III., pp. 104 & 377). From the time the little creature roused itself from its Winter torpor, on the 1st of April last, till now, I have attentively watched its movements, that I might learn somewhat of an animal necessarily but little known, from its

peculiarly retiring habits, passing, as it does, four or five months of the year in a deep sleep, and even in summer hardly ever making its appearance till the evening.

The Common Dormouse is so equivocal in its character, that whilst some naturalists have classed it with the Squirrel genus (*Sciurus*), others, with greater plausibility, have ranked it as a mouse (*Mus*); to both it presents singular claims, existing in the woods, on nuts, acorns, and seeds, constructing its dormitory in the underwood of thickets, and becoming torpid on the approach of winter; it thus far partakes of the nature of the Squirrel tribe. But in external appearance, and in its gait, and quiet stealthy nocturnal movements, it is certainly a Mouse; and as such has been classed by Linnæus and Ray. From its unconquerable disposition to somnolency, and resemblance to both these tribes, one might call it a "sleeping partner" between the two.

In Bingley's *Animal Biography*, under the head of "Dormice in general," it is stated "that their pace is a kind of leap, in which, like the Jerboas, they are assisted with the tail;" a remark not agreeing with the observations I have made on my little pet.

For upwards of five months, at different times, I have tried its paces, fast and slow, but never yet saw it take a leaping movement, save when an obstacle has been purposely placed in its way. The tail of the animal, when running, is held out on a line with its body, except when very animated; then it is elevated with a slight curl over the back. The same author has said, with reference to its drinking,—"when thirsty, they do not lap like most other quadrupeds, but dip their fore feet, with the toes bent, into the water, and drink from them." This possibly may be the case with some varieties of the Dormouse, but certainly it is not with the common or English kind. On the contrary, it laps like a Cat, and drinks in no other way; nor does the forefoot, from its construction, appear capable of being used as a "drinking-vessel," its palm being neither broad nor deep, but narrow, with a thickening or rise at the wrist, to which the four fingers shut very closely. The fore paw has no thumb, whilst the hinder foot has four perfect prehensile toes and a thumb, without the first joint or claw. On taking a torpid Dormouse into the hand, it imparts a sensation of cold, evidently showing the temperature of the animal to be lower than that of the human body. In the form of a little hairy ball, encircled with its tail, its head quite buried in the fold of its body, motionless and chill, you doubt its being a thing of life, till, by closer observation, you perceive its heart beating, slowly and gently, but unceasingly.

Passing whole months in this tranquil state, without food and scarcely breathing, it yet possesses a sensibility to pain, and will, if warmed by the fire, unbend, awake, and become active and lively, but soon relapses into its deathlike torpor. In the summer months it passes the whole day in sleep, and it is so averse

to waking up till the approach of night, that, though deprived of food for twenty four hours or more, it will not make its appearance till the following evening. Although possessing a pair of prominent sparkling eyes, its sight by candlelight is very imperfect, hardly distinguishing an object though held close to it. Its timidity is still great, every sound startling it, whilst a cough or a loud sneeze affects it like an electric shock. My specimen is very cleanly in its habits, and free from smell, an unfailing and very disagreeable appendage both to Squirrels and Mice, from which this little creature is exempt. It generally wakes up between nine and ten in the evening, and comes out to feed, from which time till midnight I sit and watch its pretty playful movements, and am often diverted with its busy manner of washing and cleaning, an act invariably performed after eating. Between four and five in the morning, it retires to its nest, rolls itself up into a ball, and there sleeps, it might be said, "roundly and soundly."

Its residence is a bird-cage, and it has made the seed-glass its dormitory. Into this it makes its bed *each* morning, of the wool I provide for the purpose, and more or less is carried in according to the temperature of the air.

Its favourite food is bread and milk; but it will eat indiscriminately of nuts, almonds, Hemp-seed and fruit.

It fattens so rapidly now, that I expect soon the entrance will be found too small, in which case the little fellow may possibly find himself in very "narrow circumstances," and be unable to get out of his glass bed-room rather before the time he might wish to begin his long winter nap.

I have written rather too "lengthily" on my little pet—a fault I trust you will pardon, and correct by taking only such parts of the description as you may think fit for the pages of *The Naturalist*—if any part of the communication be worthy. If not, pray award it (without hesitation) the fate of the "thousand and one" bills presented to the "honourable Houses of Parliament," by throwing it under your table.

I had intended giving you a short statement of a white Thrush, and of a Hawk's nest I took the other day; but I find I have already filled my sheet; so with many apologies for again troubling you, I must for the present conclude.

Stoke Ferry, Norfolk,
Aug. 31, 1838.

[Considerable caution is necessary in inferring the universality of a habit in any animal from the fact of its having been noticed in a caged specimen. But Mr. Pigott's notes are interesting, as pointing out the effects of captivity on the Dormouse. Such communications will always be well received by us.—Ed.]

SOME OBSERVATIONS ON THE CLASSIFICATION OF THE ADEPHAGA.

By Peter Rylands, Esq.

Considerable diversity has prevailed in the views of entomologists respecting the arrangement of Adephagous *Coleoptera*. Mr. Kirby selecting, as important characters, the variations in the clothing of the dilated joints of the tarsi, separates *Adephaga* into three sections (tribes), viz. :—

1. *Sarrothropoda*, or those with dilated joints, clothed beneath with a dense brush of stiff hairs :—*Cicindelidæ*, *Chlænius*, and its allies. Others have only a few hairs at the sides of the joints of the tarsi.
2. *Cystopoda*, or those with the foot-cushions formed of little membranous vesicles or cysts variously arranged :—*Brachinus*, *Agonum*, and various *Harpalides*.
3. *Pyxidiopoda*, or those with the foot-cushions formed of pedunculated cups or suckers :—*Dyticidæ*.*

Other differences in the foot-cushions have been observed, but which Mr. Kirby appears not to have noticed. These, consequently, would require the establishment of additional sections, containing species which have certainly no claim to the rank that Mr. Kirby's method would give them. And were this not the case, the evident impropriety of separating *Harpalidæ*, &c., from *Carabidæ*, and considering them as equal in rank to *Pyxidiopoda*, K. (*Hydradephaga*, MacL., *Dyticacea*, Ryl.), at once manifests the arrangement to be unnatural.

The majority of naturalists agree in dividing *Adephaga* into two tribes, 1st., *Geodephaga*, MacL. (*Carabacea*, Ryl.), and 2nd., *Hydradephaga*, MacL. (*Dyticacea*, Ryl.).

Mr. Stephens arranges the insects contained in the first tribe in seven families, namely, *Cicindelidæ*, *Brachinidæ*, *Scaritidæ*, *Carabidæ*, *Harpalidæ*, *Bembidiidæ*, *Elaphridæ*.

This arrangement is objectionable, inasmuch as it separates *Harpalidæ* and *Scaritidæ* (which evidently run into each other), and raises to the rank of a family *Elaphrus* and the allied genera, which (the comparative brevity of their antennæ being the principal distinction) can only be considered as constituting a division of *Carabidæ*.

Mr. Westwood divides his family *Carabidæ* into five sub-families :—1. *Brachinides*, 2. *Scaritides*, 3. *Harpalides*, 4. *Carabides*, 5. *Bembidiides*.† Mr. W.

* Kirby, as quoted in Westwood's *Introd. to Classif.*, p. 46.

† Westwood, *Introd. to Classif.*, i., p. 74.

remarks upon his own classification that "in considering the different primary divisions of this very natural family, as possessing a value inferior to that of distinct families, and as constituting collectively one family of equal rank with *Cicindelidæ*, I am but treading in the steps of Linnæus, Latreille, Kirby, and Leach, as well as in those, I cannot but think, of Nature herself, notwithstanding the numerical majority of the Carabideous over the Cicindelideous insects."* I am disposed to take a different view of the case; and, "treading in the steps" of MacLeay, Dejean, Stephens, &c. (and *I* trust also in "those of Nature herself"), to consider *Harpalidæ*, *Brachinidæ*, &c., as *families* of equal rank with *Cicindelidæ*. Of the characters of *Cicindelidæ*, Mr. Westwood remarks that that afforded by the slight development of the labium is the most valuable; and the maxillary articulated terminal hook, which has been chiefly relied upon, is not only absent in two genera of this family, but has been discovered in *Trygonodactyla*, a Carabideous genus. And although the general form of *Cicindelidæ* is well marked, and their habits are peculiar, yet neither appears sufficient to warrant us to consider them entitled to the rank Mr. Westwood contends for.

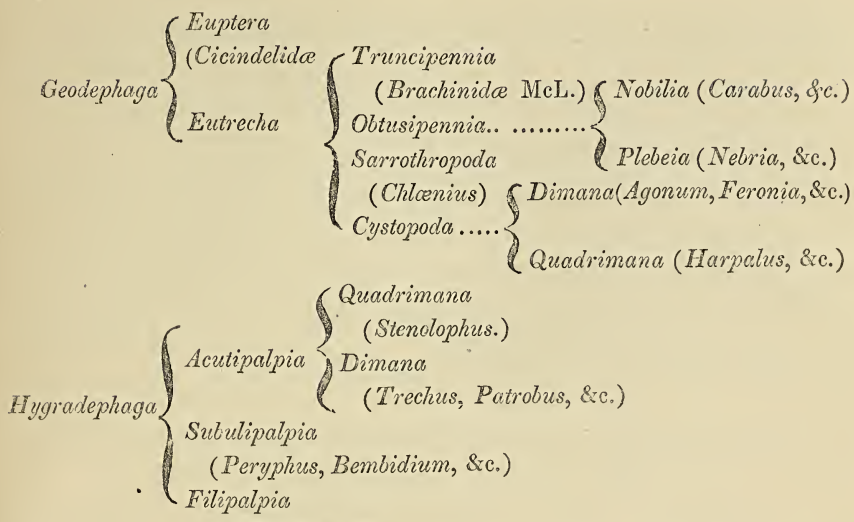
But whilst agreeing with Mr. MacLeay respecting *Cicindelidæ*, I must beg to enter my protest against another part of his arrangement of this tribe. I refer to the suppression of *Bembidiidæ*, which, being restricted by the median laws of the Quinary system to five divisions, he has found himself obliged to associate with *Harpalidæ*. Mr. Westwood justly remarks that if the peculiar structure of the palpi "were indeed the only distinctive mark of the group, this step might still be questioned, as no other *Carabidæ* possess such a structure; but the group is also characterised by the minute size, great agility and sub-aquatic habits of the insects of which it is composed; moreover, in point of number of species, it is not an inferior group."† Could anything stronger be said of *Cicindelidæ*, for which Mr. Westwood claims a superior rank?

Mr. Stephens also differs from Mr. MacLeay; and in so doing (as he believes in the circular disposition of groups) takes the opportunity to observe that Nature "does not *always* dispose her subjects in *every* department into fives, but that different numbers may possibly obtain in different groups; and why not more than five in the overwhelming family [tribe] of *Geodephaga*, when we find the succeeding one of *Hydradephaga* so greatly deficient?"‡ I should be very glad to see Mr. Stephens's suggestion generally admitted. It would perhaps have the beneficial effect of curtailing those *forcings* of *Nature* which are now so prevalent, and which are too often praised as evidences of scientific acumen!

To pass on to Mr. Kirby's last arrangement of *Adephaga*, which is as follows;

* Westwood, *Introd. to Classif.*, p. 74. † *Ibid.*, 72.

‡ Stephens, *Mandib.*, ii., p. 1.



The nomenclature employed in this arrangement, owing to Mr. KIRBY having entirely suppressed distinctive terminations, is certainly objectionable; nor is the arrangement itself less so. It is not only more intricate and complex than necessary, but his *Hygradephaga*, as regards its contents and the rank he has given to it, is unnatural: Mr. K.'s chief reason for the establishment of this additional tribe is drawn from the sub-aquatic habits of the species he includes in it. But there appears no single peculiar or constant character of sufficient importance to justify the separation of *Elaphrus*, &c., from *Carabidæ*; *Stenolophus*, *Patrobus*, &c., from *Harpalidæ*, &c., which is surely not in accordance with Nature. Nor is the arrangement of *Geodephaga* much less objectionable. I have already objected to *Cicindelidæ* (*Euptera*, K.) being considered as equal in rank with *Eutrecha*, K. (*Carabidæ*, *Harpalidæ*, &c.); but even admitting this to be correct, no sufficient grounds can be discovered for giving to *Chlœninæ*, R. (*Sarrothropoda*, K., *Chlœniens*, DEJ.), a rank equal to *Harpalidæ*, McL. (*Cystopoda*, K.), of which family it is in fact only a division.

I shall now proceed to the arrangement of *Adephaga* which I have adopted. It is as follows:—

Order *Coleoptera*, ARISTOTLE. (*Elytroptera*, CLAIRV., *Eleutherata*, FABR.).—Wings two, membranaceous, folded transversely; sometimes absent. The abdomen, and wings (when present) protected by two horny or coriaceous cases, denominated *elytra*. Mouth furnished with mandibles and maxillæ.

Section *Pentamera*, LATREILLE.—Tarsi five-jointed.

* KIRBY, *Fauna Bor. Amer.*, p. 6, as quoted by WESTW., *Intro.*, p. 73.

Stirps *Adephaga*, Clairville (*Carnivora*, Cuv.).—Maxillæ, terminated by an acute hook, and interiorly ciliated (fig. 2, *a*); outer lobe being articulated or palpiform. Anterior tarsi usually dilated in the males. Habits principally carnivorous.

Tribe *Carabacea*, Rylands (*Geodephaga*, McL.).—Jaws long, horny, and curved. Eyes prominent. Legs formed for running; the posterior two having horizontal and vertical motions, and furnished with very strong appendages, termed *trochanters*, at their origin. Body oblong, or ovate.

Families, thus characterised :—

Maxillæ { with a moveable claw (fig. 1) ..... 1. *Cicindelidæ*.
without a moveable claw (fig. 2.);

Anterior tibiæ { not notched on the inner side near the tips. (fig. 3.) 5. *Carabidæ*.
notched near the tips (fig. 4.);

Maxillary palpi { with terminal joint as large as the preceding (fig. 2, *b*.) — *Elytra* { truncated (fig. 5.) 2. *Brachinidæ*.
not truncated (fig. 6); — *Abdomen* { pedunculated (fig. 7.) 3. *Scaritidæ*.
not pedunculated (fig. 6.) 4. *Harpalidæ*.
with terminal joint minute and conical (fig. 9.) ..... 6. *Bembidiidæ*.

In the above arrangement I have principally followed Latreille, whose classification Mr. Westwood justly praises as having fully borne out its author's description of being "*fondée sur des rapports naturels.*" The connecting links between the families which he has suggested appear so natural that I cannot refrain from submitting them to the reader; and I have thought that figures of the foreign examples, of which we have no British analogues, would materially assist the student in tracing the affinities pointed out.

Fam. 1, *Cicindelidæ*, Kirby.

Intermediate forms.—*Authia*, *Graphipterus*, &c. (ex. sp. *G. multiguttatus*, fig. 6.).

Fam. 2, *Brachinidæ*, MacLeay (*Truncatipennes*, Latr., *Brachinides*, Westw.).

Interm. forms.—*Enceladus*, *Siagona*, &c. (ex. sp. *S. Europæa*, fig. 8).*

Fam. 3, *Scaritidæ*, MacL. (*Bipartiti*, Latr., *Scaritides*, Westw.)

* Although *Enceladus* and *Siagona* approach *Brachinidæ* in the form of their tarsi (which are not palmated, comp. figs. 7. and 8.), the principal connection between the two families must be taken from the labial palpi, the last joints of which are hatchet-shaped or securiform (fig. 11) in *Enceladus*, and *Siagona*. A similar form prevails amongst *Brachinidæ*. This appears to me sufficient to prove the affinity of the two families, though I am inclined to believe that other forms, more decidedly intermediate, will yet be dicovered.

Interm. forms.—*Aristus*, *Acinopus*, *Labrus*, *Broscus*, &c. (ex. sp. *B. cephalotes*, comm. Brit.).

Fam. 4, *Harpalidæ*, MacL. (*Thoracici*, Latr., *Harpalides*, Westw.).

Interm. forms.—*Licinus*, *Panagæus*, &c. (ex. sp. *L. depressus*, Brit.).

Fam. 5, *Carabidæ*, MacLeay (*Abdominales*, Latr., *Carabides*, Westw.).

Interm. forms.—*Nebria*, *Elaphrus*, &c.* (ex. sp. *El. uliginosus*, not uncomm. Brit.).

Fam. 6, *Bembidiidæ*, MacLeay (*Subulipalpi*, Latr., *Bembidiides*, Westw.)

From this family, in which the terminal joint of the maxillary palpi is minute and conical (fig. 9.), we pass on to *Haliplinæ*, R. (*Haliplides*, Westw.), a subfamily in which the same peculiarity is observed (fig. 10.), and which is arranged at the commencement of the

Tribe *Dyticacea*, Rylands (*Hydradephaga*, MacL., *Hydrocanthari*, Latr.).—Eyes slightly prominent. Mandibles almost covered by the labrum. Maxillæ with the inner lobe arched from its base. Thorax broader than long. Legs formed for swimming, the two posterior pairs compressed, and ciliated; the hind pair remote from the others; tarsal claws often unequal. Body always ovate, generally depressed.

Family 1, *Dyticidæ*, Leach.—" Anterior legs short; antennæ long."

——— 2, " *Gyrinidæ*, Leach.—Anterior legs long; antennæ short."—Westwood.

Notwithstanding the evident approximation of *Bembidiidæ* (both in their sub-aquatic habits, and the form of the palpi) to *Haliplus*, a great *saltus* (whether *Naturæ* or not has to be proved) between the two tribes is still found. The form necessary for the completion of the connexion must differ considerably from any we yet possess.

In conclusion, I must acknowledge my total inability to discover in either tribe the circular disposition of its contents: to doubt the existence of the " circles," would be temerity after the rules laid down, and assertions made, by certain of the High Priests of the Temple of Nature.

Bewsey House, *Warrington*,
June 8, 1838.

* Some entomologists contend that these genera (*Elaphrus*, &c.) are closely allied to *Cicindelidæ*, and ought not therefore to be arranged as above. It cannot be denied that in general appearance they resemble *Cicindelæ*, but certainly in all important characters they are more closely allied to *Carabidæ*, from which in fact they only differ by the brevity of their antennæ.

SKETCH OF A VOYAGE ACROSS THE NORTH AND BALTIC SEAS.

By Charles Drosier.

Before commencing the proposed papers on the Natural History, climate, and scenery of the vicinity of St. Petersburgh, it has struck me that a brief detail or sketch of a voyage across the North and Baltic Seas, will not be altogether unfraught with interest, or unsuited to the nature of your periodical. To the lover of Nature there is matter of delight and instruction in all situations; whether he roams the inhospitable deserts of the south, the frozen waters of the arctic regions, or the restless plains of the "multitudinous ocean," something will always be found worthy of his attention; and though his observations, to the eyes of many, may be productive of no practical utility, yet if they have given rise to pleasing emotions in his own mind, and have awakened similar feelings in others whose nature is susceptible of refined impressions, he will never think that his time has been illspent—much less accuse himself of idleness. The following account, which I shall draw up in the shape of a narative, for the sake of connexion, must be considered with reference only to the natural objects of which it treats. Had I discussed other matters, more than was necessary to unite the whole, it would have swelled under my hands, and become inapposite. One thing I have to regret is the little facility for observation on board a merchant vessel. Supposing a bird, however valuable, to be shot, it can seldom be secured, and the most interesting coasts are generally seen only at a provoking distance; but still if a man has "eyes in his head," he can mostly find something on which to employ them.

I left Hull on the 7th of August, 1835, in the *Neva*, a stout Russian trader of three-hundred tons burden, commanded by Capt. Wilson. We cleared the mouth of the estuary late in the evening, and found a long easterly swell setting in against us; the wind was light at south, and the ship, having just steerage weigh upon her, tumbled about in a style sufficient to "play Puck with the intrils" of any but those who had been formally introduced to old Davy Jones, and could appreciate his pranks. Fortunately, we were all old familiars, though our acquaintance heretofore had been simply of a coasting nature. I felt somewhat excited at the prospect before me, of surveying a decent moiety of the "old salt's" territories, with their dependent coasts; and had prepared fishing-tackle to spirit away some of his liege subjects; but found them in the end more attentive to their interests and safety than I had expected.

In two days, with light southerly winds, which had the effect of laying the swell, the ship reached the south-western limb of the extensive Dogger bank, so

celebrated for its fishery. At noon—to use a sailor's phrase—it fell clock calm; the fishing gear was prepared, and hooks of the smallest size, used for Cod, were baited with pieces of raw pork and beef, cut by the critical hand of the mate; a line containing two, attached by short pieces of cord to the extremities of a stout iron wire bent in the shape of a bow (technically a "chopstick"), was let over the ship's quarter in thirty fathoms of water; another, to which I gave my personal attention, over the stern. An hour passed without a single nibble would have been sufficient to blunt the ardour of a keener sportsman than myself, had there been other amusement stirring; but as this was not the case, I determined not to relinquish my line without giving it a fair trial; and contented myself with ten-minute tests—if I may use the expression—"*plurima volvens;*" but with no success. This bank, however, in most places abounds with Cod (*Morrhua vulgaris*, Cuv.), Haddock (*M. æglefinus*, C.), Ling (*Lota molva*, C.), and Hollibut (*Hippoglossus vulgaris*, C.). The water has a dull green appearance, and is rather turbid.

The following day we came in amongst the Dutch fishing-boats, which resort mostly to the centre of the bank. The shrouds of these skiffs were covered with fish undergoing the drying process, after being salted. The men in their red woollen caps, and breeches of the same colour, with their broad, honest, cheese-shaped countenances, corrugated by hard north-easters, had a picturesque appearance; some of them hailed us as we passed, in broken English. The vessel was going too fast to permit of fishing. The next morning we had "the blue above and the blue below" again to ourselves, without a sail in sight to employ the telescope upon. By the reckoning we were now entering upon the southern extremity of the Great fish-bank, a northern limb of the Dogger; and here we were visited for the first time by a Ring Dotterel (*Charadrius hiaticula*), which approached, and performed several revolutions round the ship, as if with an intent to alight and rest upon it, occasionally emitting his common low melancholy note. He remained with us more than ten minutes, darting up, and passing over us, till his fears seemingly obtained the mastery over his inclinations, when he left the ship, and held his course to the westward, close to the water, at a round rate. I followed him with my eyes as he skimmed the surges, which must have appeared to the little creature interminable, till he was no longer to be seen, wishing him a prosperous passage to, and a safe arrival in, Old England, whither no doubt he was bound, as we encountered him almost in mid sea. The instinct of migratory birds is really wonderful! Several Great-black-backed Gulls* (*Larus marinus*) and Common Gulls (*L. canus*) were seen in the course of the

* At least we presume this is the species alluded to by Mr. Drosier's MS., as "the Wagel (*L. nævius*)." If we are in error, our correspondent can correct us; but the above names are no longer employed by naturalists; and their adoption can only lead to confusion.—Ed.

day; as well as strings of Guillemots (*Uria troile*) and Razor-bills (*Alca torda*). We encountered these birds in every part of the sea in tolerable plenty. In the afternoon a Prussian vessel was descried, with her fore-topsail backed, lying to for the purpose of fishing—a thing which foreign merchantmen frequently do, and which the English look upon with contempt. It reminded us, however, that we had hooks aboard, and though the ship was going a-head at the rate of two and a half knots, we renewed our attempts, in fifty fathoms of water, on a stiff mud bottom, to inveigle the Cod, with the same luck.

In the morning the wind blew a small gale, such as sailors designate "fair weather flop," and we cracked along at the rate of nine knots, laying our course about two points free; we ran eighty miles. The wind dropped at evening, and the sea went down in the night. During the breeze the ship was under double-reefed topsails; and, being comparatively light, lay over from the wind more than is usual. I was highly amused at witnessing the straits to which a Pig we had on board was reduced by this circumstance: the animal, a great favourite with the sailors, was allowed the liberty of free exercise on the deck. The spray, which continually fell in showers around, compelled him to take shelter to windward, under the bulwark; but it required the utmost exertion on his part to maintain his post. At every unusual lurch he found himself settling to leeward, and his sinews and muscles were incessantly on the strain; in a sitting position, with his fore quarters constantly on the alert, he looked an absurd object of Swinish despondency; and the prolonged impatient whine, mixed with low gruntings that broke from his chest, told his distress to those around; but his appeal appeared to soften no heart. On several occasions the sea fairly unshipped him, and he slipped slowly to leeward, in the most ridiculous posture, till the woodwork brought him up. After a few unsuccessful efforts, he desperately scrambled back to his old berth; when he had afforded considerable mirth in this way, the seamen compassionated his condition, and confined him in the long boat. This Pig was a mischievous rogue; and before the voyage was concluded, the men, in self defence, were obliged to imprison him *in toto*. He delighted to get behind a person, unobserved, and gnaw his trowsers. On one occasion he utterly dissected the short tog of a tar who had "turned in" and left it on the windlass.

The large arm of the sea called the Skager Rack was now before us; and vessels of all kinds were seen in abundance, going up and down. From its proximity to Norway, the Razor-bills and Guillemots became more plentiful, and frequently floated, in lines composed of seven and eight individuals, close past us, though seldom within gunshot. They swim remarkably fast, and keep time with a ship at the top of her speed. The order they maintain, the buoyancy with which they float, and the striking contrast of the black and white which compose their plumage, on all occasions make them objects of interest. The mate of the

ship told me he had seen them in the middle of the Atlantic during the breeding-season, which, if true, is remarkable, as the offices of incubation must be neglected, supposing that they really stray so far from home. These birds, in the stormy weather which distorts the face of the ocean during the gloomy months of winter, to escape drowning in the "rude imperious surge," take refuge in the chains of passing ships, where they allow themselves to be captured, having no doubt reduced the chances of danger to a calculation. It speaks well for the humanity of sailors, to know that they are generally turned off again, like NOAH's Pigeon, to go whither they list, when "the winds are all hushed, and the waters at rest." Their cry is peculiarly wild, and on calm nights, when the darkness of the atmosphere permits them to approach a ship close without being perceived, it is startling. One could fancy the Tritons and Mermen sounding their warwhoop.

The sea is here deep green, and beautifully clear, allowing objects to be seen eight and ten feet beneath its surface. I was gratified with the appearance of an immense number of Jelly-fish (*Acalepha libera*). They were of several species, but all my efforts to get one on deck for examination proved abortive. The most common kind was one with a large Mushroom-shaped body, about a foot over, with streaming roots four feet long; at the first view not unlike *Rhizostoma cærulea* of CUVIER in shape. Individuals differed materially in size. Another was of a circular shape, about the size of a pressed Apple, without streamers or roots, as I have called them. I tried to haul some up in a bucket, and to catch others with Cod-hooks, but they eluded the first, and the latter broke through the soft texture of their bodies, as they heavily passed the side of the vessel, inflating and collapsing their members.

The following day gave us a view of the blue cliffs of Norway, off Flickers, at the distance of twenty miles. It was pleasing to see land again, even after so short a space of absence from it as a few days. I took the telescope, and endeavoured to catch some of its minor features, but could make out nothing more than precipitous rocks, rising, as it seemed, from the edge of the water, the craggy uneven summits of which stood out in relief against the horizon. We again rigged out our fishing-gear, but now used what is called a "railing" apparatus, our intention being to try for Mackerel (*Scomber scomber*, LINN.) and Garfish (*Belone vulgaris*). It consists of three or four pounds of lead cast in the shape of a boat, with a stick a foot long bound on at the stern, in the manner of an "outrigger." To this is attached a hook on a string six feet long; and a strong cord tied to the stem part is let out till about thirty yards are carried out; and the ship, going at the rate of three or four knots, tightens the whole, and prevents the hooks going deeper than six or seven feet in the water. Not a fish rewarded our trouble this day. The Captain propounded an explanation of our

ill luck, which might or might not be correct, as far as I was a judge, viz., that the Mackerel had left these latitudes on account of the advanced season, as they seldom refuse to bite when present.

The low sandy coast of Denmark was the next land we made, and in the course of the day six Garfish were caught, the flesh of which I thought delicious, though I have heard it esteemed poisonous. The bones become vivid grass green by boiling. A number of the Common Tern *(Sterna hirundo)* passed over the ship at different times during the day. The large species of Jelly-fish disappeared about the 10th degree of longitude. We were now on the eve of quitting the North Sea, and it may be as well to mention, that its soundings, not considering the coasts, vary from 20 to 180 fathoms. Three pounds of the water have been found to contain 747 grains of Salt. Having rounded the point, we proceeded down the Cattegat, keeping the Swedish coast in sight; it is rocky, and presents blue hills in the perspective. A great deal of Marsh Grass, mixed with marine fleshy plants, together with *Fucus vesiculosus*, and other *Algæ*, were drifting about. The smaller Jelly-fish remained.

Clearing at Elsinore, we continued our voyage with a "spanking" breeze, having passed the Island of Haen, celebrated for the observatory of Tycho Brahe, which is still to be seen. A rather singular thing occurred on board. The Captain took out a Dog with him from Hull; this animal had been indisposed several days prior to the time I am speaking of, and behaved in so strange a manner that I requested he might be confined, lest he should prove rabid. This he did not consider necessary, observing that the Dog was only ill from the effects of salt air and diet—a thing usual with Canine voyagers when they commence their maritime career. The cook of the ship had set before this animal a pan of water, upon which he set up a yell, scoured round the deck furiously, and sprung over the boat into the Channel, before any one could recover from his surprise and intercede. He howled piteously in the water, but it was out of the question to stop the ship and lower a boat: we soon ran him out of sight, and I dare say he never reached the shore, which was four miles at the nearest from him. The crew regretted the loss of the Dog—I was rejoiced at it; for I have not a doubt but that he was mad.

The sloping well-wooded coast of Zealand, with its Corn-fields and neat white-washed houses, is highly refreshing to an eye that has been *water-logged* by a passage across the German Ocean. We entered the Baltic, and passed the island of Bornholm in the night. Its outline was indistinctly seen the next morning when I ascended the companion ladder. At noon a Hawk, whose species I could not determine, hovered over us. I tried to shoot him, but he judiciously kept out of range of my carbines. Shortly after, three Porpoises (*Phocæna communis*) appeared in our wake, and after sporting for a few minutes swam off and left

us; these, with the exception of some seen in the Humber, and one in the Sound, were all I observed.

The rest of our voyage up the Baltic was tedious; we were baffled by contrary winds and calms; the latter appear to be common there in the summer months. The water, when unruffled by a breeze, has a curdy appearance, which I think may be attributed to the animalculæ it contains; yet I could form no conclusion as to this, being unprovided with a microscope. Three pounds of it have yielded 389 grains of Salt. The general depth is from 40 to 60 fathoms. After leaving Gothland, the east coast of which is sandy with low cliffs, a solitary Curlew (*Numenius*) was the only living being seen, though ships were generally in sight. The Seal (*Phoca vitulina*) is an inhabitant of the Baltic; a considerable number of them are killed on the shores of the islands Gothland and Aland at the breaking up of the frost. The Cod never advances, I believe, beyond Bornholm. The Salmon (*Salmo salar*), the Flounder (*Platessa flesus*), Turbot (*Rhombus maximus*), Smelt (*Salmo eperlanus*, L.), Sturgeon (*Acipenser sturio*), are also found there. As we entered the Gulf of Finland, vessels became plentiful; but the wind flying to the east, blew strong, and compelled us to beat up against a short twitching sea, under double-reefed topsails. When the breeze subsided, we were off the Nargen island, which lies near the shore of Revel in about 25 east. It rises abruptly from the water; its cliffs are steep, and their colour deep red; they are probably of Granite. Its top is covered with wood. This island stands in a bay, and the adjoining coast is bold and hilly. We saw here several large troops of Scaup Ducks (*Anas marila*) streaming over the water, and others on shore. Insects of the Lepidopterous, Dipterous, and Neuropterous orders were frequently seen passing across the Gulf in fair weather with the wind, although the distance over is rather more than sixty miles; some of them rested on our rigging.

The precipitous and small island of Hogland was the next land we approached sufficiently near to create interest. This island is covered with dwarf brushwood, and possesses a light-house at its northern extremity; we lay off it for two days, with light winds, making hardly any progress. We were visited by numbers of insects in the day, the largest of which were Dragon-flies; a couple of Seals also came near the ship. The wind in the end came round to the west, and we bade adieu to Hogland with a flowing sheet. The gulf rapidly became narrower, and the opposite shores were distinctly seen, covered principally with Fir and Pine. The land is flat near the water, but undulates as it advances. It has by no means an unpleasing aspect, though it becomes necessary to go on shore to see its true characteristics. Passing the *Guard* ship (from which we received an official visit), and part of the Russian fleet at anchor, we dropped up to the mole head, and were washed in at one, p. m. It would be foreign to my

purpose to relate what occurred to me on landing, or to describe the place. The voyage, which had occupied three weeks, was concluded. Next day I was seated upon the deck of the Petersburgh passage-boat, and as she churned up the foam at the steady pace of ten knots an hour, I took a farewell of the English shipping, rapidly diminishing in the mole. It appeared as if the "last link were broken" that had connected me with England; but I was too much amused with the motley group of passengers before me, in all about 150, composed of members from most of the European nations, to indulge the feeling sentimental. The discord of tongues sounded strange to an ear accustomed to English alone. In two hours from the time of embarkation I found myself in the capital of Russia.

Boughton, Norfolk,
Sept. 5, 1838.

CORRESPONDENCE.

Notice of a venerable Elm-tree.

To the Editor of The Naturalist.

Dear Sir,—I was induced, one evening last week, to pay a visit to a group of venerable Elms, on the estate of Sir H. Bedingfeld, Bart., at Caldecote, near Oxboro' Hall, in company with a friend whose ready pencil sketched their giant forms, whilst I clambered up their knotted stems, to measure their height, &c. &c.

Half circling a high mound of earth, on the summit of which are the scarce visible ruins of a church long since gone to decay, these fathers of the field stand, and claim attention, as well from their lordly bearing as from the evidences of their great antiquity. The accompanying sketch is taken from a tree growing away from the group, and the following figures are the correct measurements of the same:—

Circumference, three feet from the ground, $32\frac{1}{2}$ feet.

Largest diameter, 14 feet.

Height of the principal stem, which has been broken off some years ago, $25\frac{1}{2}$ ft.

Circumference of the stem at the height of 25 feet, $5\frac{1}{4}$ feet.

The circumference of the roots above the ground, considerably above 40 feet.

The trunk, though quite hollow, is exteriorly sound and good, save two large apertures below. On the top three large branches shoot out, forming a triangular base of 12 or 14 square feet. The top of the tree is covered with delicate green foliage, from numerous healthy arms. Altogether this tree is a noble specimen

for the study of the painter and the naturalist. One other Elm-tree, forming the half circle, is five feet larger in circumference, is 17½ feet at the greatest diameter, higher and more majestic in appearance, from the bold projecting roots of which the sketch was taken.

Should the above statement (upon the correctness of which you may rely) appear worthy of a corner in your Journal, pray curtail it as you please. It may possibly be the means of inducing some of your numerous readers to stop, admire, and obtain a more intimate knowledge of the venerable trees in their respective neighbourhoods. JESSE, in his admirable *Gleanings*, says, "the forest term for the Elm is 'a weed.'" If so, long may they flourish!

NOTES ON THE SPRING OF 1838.

The only indication of spring being *earlier* this year than the last, that I have noticed, is that I gathered full-blown White-thorn (*Cratægus oxyacantha*) or May, on the 23d of last month. In 1837 I could not anywhere procure a piece till the 31st. The trees generally are backward; the Elm not in full leaf; many of the Common Ash (*Fraxinus acelsior*) are yet perfectly destitute of covering; others just feathered, the tender leaflets of which are injured by the late frosty nights. The Acacia and Walnut-trees are but just beginning to exhibit signs of returning life. The specimen of the latter kind alluded to in my last letter is apparently very unhealthy.

I am, dear Sir,

Yours most respectfully,

RICHARD PIGOTT.

Stoke Ferry, Norfolk,
June 15, 1838.

SUPPOSED VARIETY OF THE BLINDWORM.

To the Editor of the Naturalist.

MY DEAR SIR,—Having had the good fortune to capture, a short time since, on Woolston Moss, near here, a specimen of *Anguis* which agrees in almost every respect with PENNANT's description of *A. eryx*, I beg to send you its characters, in the hope of gaining further information on the subject from some of your readers. Length, 14¾ inches; belly of a bluish lead-colour, with a few scattered white spots, which become more continuous and regular under the tail; the remainder of the body is grayish-brown, with three longitudinal dark lines, one extending from the head along the back (becoming indistinct towards its termination) to the points of the tail, the others broader, and extending the entire length of the sides; scales, &c., as in *A. fragilis*.

The only variation in my specimen from PENNANT's is in size, and that very

slightly (being one quarter of an inch, only, less in length), and perhaps in the disposition of the white spots underneath the tail. Your readers will probably be aware that a specimen of *Anguis* was sent by the late Dr. Skene to Pennant, by whom it was described; it was afterwards named by Linnæus *A. eryx*. It occurred at Aberdeen, and I am not aware that a second specimen had been captured previous to the one now noticed. Mr. Jenyns appears to consider it only a variety of the Common Blindworm, in which he is probably correct; but from the manner in which he mentions it, I am inclined to believe that he had not seen a specimen. The principal point in which it differs from *A. fragilis* is in its greater size (the Common species seldom exceeding ten or twelve inches), and in the longitudinal line upon the back. Further observations are of course necessary to settle the question, and I shall be glad if any of your correspondents can communicate such. I should also be obliged by the communication of Mr. Bell's opinion respecting this species, as I do not possess that gentleman's *History of British Reptiles*.

Very sincerely yours,

Bewsey House, Warrington, Sept. 20, 1838. Peter Rylands.

PROCEEDINGS OF THE BRITISH ASSOCIATION, NEWCASTLE, AUGUST, 1838.*

(Concluded from page 40.)

Section D., Zoology and Botany.

Wednesday.

On the gemmiferous bodies and vermiform filaments of *Actinia*, by T. Pridgen Teale.

The cylindrical body of *Actinia* is divided into vertical compartments by partitions of muscular fibres, attached to the roof and tentacula, the sides and base of the animal. The internal borders of some of these septa are attached to the stomach, and support it; others terminate before reaching that viscus, but support, through the intervention of a delicate mesentery, a *gemmiferous body*, which has been incorrectly designated an *ovary*. The stomach communicates inferiorly by a cir-

* The gentleman who furnished the report of Section D., has not forwarded to us that of the Geological Section, which, however, is the less to be regretted, as the proceedings of the latter department are ably given in recent Nos. of *The Athenæum*.—Ed.

cular orifice freely with the interseptal spaces, and through them with the interior of the tentacula. The inner surface of the stomach exhibits numerous vertical plaits, corresponding with the attachments of the septa, two of which, more developed than the others, divide the animal into halves, giving it a bi-lateral symmetry, and internally at least destroying its radiated character. The *gemmiferous bodies*, about 200 in number, form elongated masses on the inner edges of the delicate mesenteric expansion of the septa. Under the microscope, each gemmiferous body is seen to consist of a compact layer of *gemmules*, round at first, but changing their form from mutual pressure as their development increases, and indicating by a well-marked central depression, the situation of the oral aperture, but without tentacula. When the gemmules are large, they raise the investing membrane, and project considerably from the surface of the gemmiferous mass, in which state they may be easily detached by slight pressure with the point of a needle. There is no regular gradation of size in the gemmules from the top to the bottom of the gemmiferous mass, as if they successively arrived at maturity, as they are represented to do by Spix, but their size in each mass is uniform, except that there are a few small ones scattered indiscriminately among the rest. The development of the gemmules, however, varies in different gemmiferous masses of the same *Actinia;* and in different *Actinia* at the same season of the year, from March to November inclusive. The colour of the gemmules varies in the same species. Attached to the internal border of the gemmiferous body, from top to bottom, there is a soft minutely-convoluted *vermiform filament* of a milk-white colour, about the thickness of a Horse-hair, but so minute and delicate superiorly that the author has not been able to disentangle its convolutions, and detect its commencement; but inferiorly the filament increases in size, its convolutions are less intricate, and finally it passes in a simple wavy line to the stomach, where it terminates. During the life of the animal, the filament exhibits a distinct vermicular motion, and detached portions of it placed in sea-water slowly coiled themselves, and exhibited considerable locomotive power for a few hours, when it gradually ceased. The functions of the vermiform filaments are very obscure, some naturalists considering them to be oviducts, but in this view the author cannot coincide, for reasons which he assigns, and in particular because he has never been able to detect the patent extremity of the tubular filaments which this office implies, nor any of the gemmules in their progress through the tube, notwithstanding the frequency of his observations, the immense number of the gemmules, and the great length of the filaments exceeding the length of the animal some thousands of times. In the absence of direct evidence, the author suspects that the filaments are elongated follicular glands, analogous to the salivary, pancreatic, and hepatic follicles of animals a little higher in the scale of organization, supplying secretions subservient to the digestive process.

And as to the re-production of the animal, he believes that it is a strictly internal gemmiferous process, in the course of which the gemmules burst their envelope, and escape into the interseptal spaces, where they receive that constant supply of sea-water which is necessary to their development. In proof of this opinion, the young of the small *Actinia* which abounds on our coast (*Actina equina*) are found in the interseptal spaces, and not in the stomach, where the filaments terminate.

Mr. Gray drew attention to the circumstance of Mr. Teale living in the centre of the island and yet having produced a paper on a sea animal in which its structure was developed more perfectly than in the researches of Ehrenberg, Spix, and others. The Rev. F. W. Hope having inquired how Mr. Teale preserved his specimens, the latter stated that specimens were often injured by being placed in spirit when alive. He allowed them to become moribund, then divided them to prevent the secretions from hindering the action of the proof spirit into which he immersed them. This plan was applicable to all animals.

Mr. Wallace read a paper on the inosculation of two trees of the same species. This is not an unfrequent occurrence, and therefore we shall not enter into particulars.

Dr. Bellingham forwarded a paper containing an account of a new species of *Ascaris*, which he proposed to call *A. alata*. Its most remarkable character was its posterior extremity being larger than the inferior.

Capt. J. E. Cook, R.N., read a paper "On the geographical distribution of the genera *Pinus* and *Abies*." There were about 70 known species of these genera. They might be distributed into five groups:—1. Those of Old America, which included the United States, the Mississippi and Canada, with Labrador; 2. Those growing between the Pacific and Atlantic Oceans, in the district known by the name of the Rocky Mountains, and which might appropriately be called the "Douglas group"; 3. The uplands of Mexico; 4. The Himalaya Mountains; 5. Europe. The first group contains about 20 species, producing only second-rate timber. The second contains about 15 species, and from those growing in England the best results might be anticipated from their introduction. 3. The species from Mexico are few, and at present little known. The fourth group was also little known. The last, the European series, is the most valuable. In this group the quality of the species is, as nearly as possible, in a direct ratio with the ability of the tree to resist cold; all the best species being found in an extreme northern latitude, or in an equivalent situation on Mountains in the south: no valuable species at all being found on the shores of the Mediterranean or the Baltic. The highest place given in the European series is assigned to *Pinus cembra*, and *P. uncinata*, both of which grow in their respective Alpine and Pyrenean forests, above *P. sylvestris*, the Scotch Fir, and both excel it in the

quality of the timber. After these in succession came *Pinus sylvestris*, *P. laricio*, *P. pinaster*, *P. pinea*, and *P. Halepensis*, and their value diminished with their want of elevation. The genus *Abies* did not appear to yield timber so valuable in quality as *Pinus*. The species were not so numerous. *A. excelsa* is one of the hardiest, and *A. pectinata* might be cultivated in this country with probable success. The cultivation of the hardier and more valuable species of these genera was strongly recommended from the results of the experiments of the Duke of Athol, who had found that timber of sufficiently good quality for the ordinary consumption of the Navy, might be grown at 1–140th the expense of Oak, taking into consideration the rental of the land, and the ground occupied, besides the vast value given to the land by the fertilizing properties of the Larch. The author considered that 100,000 acres of waste, taken from the Grampian hills, for the growth of Larch, would, in two generations, not only supply all the ordinary wants of the country, but enable us to export it. In the west and south of England *Pinus laricio* and *P. Hispanica* would probably succeed best; the Cedar of Lebanon might also be tried in these districts. He likewise recommended the Larch to be cultivated by the proprietors of cold Clay land in the north of England, as a means of improving the land by the deposition of its spiculæ, the trees being kept open for the admission of Sheep for fifteen or twenty years, when the trees being thinned, good open woodland would be formed, the soil of which would be good. No other species of tree should be mixed, as the Larch is recommended merely as a fructifier or ameliorator of the soil.

Prof. Graham stated that *Pinus morinda*, one of the Himalaya groups, had borne this climate very well. With regard to *P. Douglasii*, there were two varieties—one that had sustained little injury during the past hard winter, and another that had sustained very considerable injury. He might add, that the *Araucarias* had suffered no injury last winter in Edinburgh. He had thought that when trees grew but little, they were best enabled to stand the frost; but his had grown every year more and more, and yet stood last winter without injury.

Sir Charles Monk observed that *P. morinda* had been damaged during the past winter at his residence, fourteen miles from Newcastle; he had specimens of *Araucaria* which were not at all injured during the past winter. With respect to *P. Douglasii*, he had received a letter from Mr. Knight, just before his lamented death, in which that distinguished individual had informed him he had succeeded in grafting this Pine upon the Common Larch. He had sent a fine specimen of *P. Halepensis* to the Horticultural Gardens at Chiswick, but it was destroyed one severe winter. He has at present at his own residence a *P. Halepensis*, which had resisted the last winter. *Pinus Douglasii* was not sufficiently matured to produce seed, but it might be propagated by cuttings.—

Mr. Carr has a fine specimen of *P. Douglasii* near the Cheviot Hills, but thinks it has the appearance of a tree out of climate, being covered with blebs.—Capt. Cook thought that the Larch was not a good species on which to graft *P. Douglasii;* one nearer allied would be better.—Prof. Graham said, if timber was wanted, then it was best to graft on a closely-allied species; but if fruit, then it was best to graft on the most distant.

The Rev. F. W. Hope read a paper "On the modern classification of insects." He stated in the first place, that modern entomologists had attended almost entirely to external organisation. In so far as internal organisation had been attended to, it was useless, for the intestinal canal had been thus exclusively made use of. He then referred to several anomalies of these organs amongst various classes of insects. After pointing out the want of uniformity of plan in the prevailing systems of classification, he directed attention to the question as to whether the nervous system might not be made the basis of a more natural arrangement of insects than had hitherto been adopted?—Mr. Gray objected to the nervous system or any other internal organ being used as a means of classification; the external forms were much more easily discovered, and external conformation so often accompanied internal variations, that it was unnecessary to have recourse to minute dissections to discover the position of any object in classification.—Mr. Hope stated, that external form was so fallacious a guide, that all naturalists were abandoning it. The nervous system was the fundamental point in the system of animals on which all other parts were dependent: it was the point on which all the great divisions of the animal kingdom were founded; it constituted the surest means of distinction, and every day added to our knowledge of its varied forms. In the class *Insecta*, great progress was making, and by the labours of such men as Muller, Ehrenberg, Grant, and Newport, the latter of whom he might call the Lyonnet of England, they were making rapid strides towards establishing a classification of insects on a knowledge of their nervous structure.

Mr. G. B. Sowerby exhibited specimens of *Lycopodium lepidophyllum*, pointing out the facts, that, instead of having numerous stems disposed in a stellated form, as stated by Hooker, the whole plant consists of a single spiral-branched stem: and that the fructifying spikes, instead of being "*acutè triquetris*," are of a *square form*, with sharp edges. He also laid before the Section some specimens of *Encrinus moniliformis*, displaying various monstrosities of form in the number of plates of the pelvis, costals and scapulars, as well as in the arms, in which were manifest several variations from the normal form of the species, from five to six pelvic plates, costals, and scapulars, and from nine to thirteen arms.

Mr. Strickland read a paper on *Ardea alba*. This bird, he stated, had been unjustly excluded from the lists of occasional visitors to this country. One

had been caught at Hornsea Moor, in Yorkshire; another had been killed at Scarborough, and a third, stated to have been shot in the neighbourhood, was in the possession of Mr. Foljambe, of Osberton.—Mr. Strickland also gave a description, and exhibited a drawing, of a large fish of the Shark tribe that had been caught on the East coast of Yorkshire.

Mr. Fox was glad to find that *Ardea alba* was really a British visitor: it had been described as such more than fifty years, but rejected in recent catalogues.* He inquired if any ornithologist had seen *Ardea candidissima* in this country; he believed it was very common to find this species under the name of the Little Egret (*A. egretta*) in the museums of this country. He believed they were generally foreign specimens.—Mr. Selby had never heard of *A. candidissima* being shot in this country.—Mr. Yarrell thought the fish would be found to resemble one brought from Africa by Dr. Smith; it certainly was different from any he had ever seen or heard of as caught on this coast. This fish he thought belonged to the genus *Scyllium*, of Cuvier; but Dr. Smith had found it necessary to subdivide that genus, and this animal might be referred to the group thus separated from the species originally placed in the genus.

Thursday.

Sir Wm. Jardine being absent, Dr. Greville took the chair, and introduced to the Section Prof. Ehrenberg. The Professor, who spoke in French, then proceeded to lay before the Section an account of his discoveries among the *Infusoria*. He had with him a copy of his large work on this subject, with which he illustrated his remarks, observing that he should never complete it, as the subject was so extensive. He exhibited to the Section a bottle containing a kind of earth from Lake Lettnaggsjöu, in Sweden, called *Bergmeh* by the inhabitants, and which he stated to be composed almost entirely of fossilised animalcules, which accounted for its reputed nutritive properties.

Professor Rymer Jones took this opportunity of stating to Prof. Ehrenberg, that he had not been able satisfactorily to confirm all his discoveries, especially the intestinal column to which he supposed the gastric vesicles were attached. In *Paramecium aurelia*, he had distinctly observed a rotatory motion of these vesicles, which was quite inconsistent with the idea of their being attached to a central column.

Prof. Ehrenberg replied, that it was very difficult to detect the central canal, and that *Paramecium aurelia* was a bad subject in which to discover it. He had, however, been led to his conclusions by a long series of observations on the

* We are at a loss to know to what catalogues Mr. Fox alludes. Selby, Jenyns, and all our best modern ornithologists, admit *Ardea alba* as a straggler in Britain, on the authority of Montagu, Latham, &c.—Ed.

animals, during the period of their taking food. He was proceeding to explain at some length, when the President observed that as other business pressed, he must for the present interrupt the discussion, which he exceedingly regretted, both on account of its interest and its importance.

Dr. Parnell then exhibited some White-bait (*Clupea alba*) which he had taken in the Frith of Forth, observing that this contradicted the recent newspaper statement that they existed only in the Thames.

The Rev. L. Jenyns exhibited a series of specimens of the Square-tailed Shrew (*Sorex tetragonurus*, Herm.), and pointed out the distinguishing characters between it and the Common Shrew (*S. rusticus*, Jen.). He also exhibited a specimen of the Chesnut Shrew (*S. castaneus*, Jen.), which he had formerly considered as a mere variety of *S. tetragonurus*, but of which he had now seen three individuals, and which he was satisfied deserved to rank as a distinct species. It is principally characterized by the bright chesnut colour of the upper parts; though there are other differences in the tail and in the form of the cranium. It was observed, generally, that the characters of the cranium were found of great assistance in determining the several species of this genus.

Mr. Gray then made some observations on the boring of *Pholades*. He stated that this process had been attributed to two causes—chemical and mechanical. He was inclined to attribute it to the latter. He exhibited some specimens of Chalk which had been bored by a *Pholas*, and pointed out some circular grooves which were made in their interior by spines on the outside of the shell, as well as a central impression produced by an elongation of the shell to a point, at its inferior surface. He stated that the animal did not occupy the whole of the cavity it made, but the upper part only.—Mr. Mark, of Newcastle, stated that he once had some *Pholades* alive in his possession, and had had ocular demonstration that they produced the cavities in which they resided, by a circular movement of their shells.—Mr. Alder had observed that all the rocks which these animals bored were soft under water, and did not become hard till they were exposed to the air. He then pointed out the structure of the shells of *Pholas*, &c., that enabled them to bore. *Saxicava rugosa* had not this structure, and was, probably, a chemical borer; *Venerupis perforans* was supposed to be a borer, but he believed it only occupied the deserted tenements of the *Pholades*.

Sir Wm. Jardine then read a report, made at the request of the Association, "On the *Salmonidæ* of Scotland." He observed that the fish of Scotland, from the alpine or subalpine character of the country, were nearly all *Salmonidæ*. *Cyprinidæ* are found to prevail in the south of Britain, but they gradually decreased towards the north, and were entirely supplanted by the *Salmonidæ* in Scotland. There is great difficulty in determining the species of *Salmo*, on account of their varying character. The principal points to which inquiry had

been directed in the present report, were:—1. The habits of the Common Salmon *(Salimo salar)* in the sea; 2. Their food whilst in the sea; 3. Their breeding, economy, and growth. On the first two points it was observed that they were seldom found far out at sea, and that their food consisted of Worms, insects, Crustacea, &c., not being confined to the ova of *Echinodermata*, as supposed by Dr. Knox, of Edinburgh. The third head was the most important. It migrates for spawning from October to the end of January. It deposits its spawn in the sand, but the particulars of this occurrence are at present not well known. The young are hatched about the end of March or April. From this time to May they were *supposed* to increase from four to six inches, and then to migrate to the sea, from whence they returned in July, weighing from three to eleven pounds, and spawning the following winter. The rapid growth of the fish is proved; but Mr. Shaw, an artizan, of Dumlaury, by keeping fish in artificial ponds, has come to the conclusion that the young Salmon do not migrate the first year, and do not attain the size and dress of the *fry* till the second May after their exclusion from the ova. Mr. Shaw also discovered that, during the growth of the young Salmon, their colour and marking were those of Parrs which changed at the time of migration. From these facts, Sir William came to the conclusion, "*that a portion of the fishes known under the provincial name of parr are the young of some migratory Salmon; and that the time after the exclusion from the ova, until arriving at the migratory dress, is longer than has hitherto been asserted.*" The term Parr is here used in its popular sense.

Of the other migratory Trout, from two to five species are enumerated by British authors, Yarrell, Jenyns, and Parnell making but two; the last, including under *Salmo eriox* the *Trutta salmonata*, Will., gives seven varieties, and under *S. trutta* places *S. albus* of Fleming. Their geographical distribution is difficult to ascertain; the west coast and Solway Frith are the great localities of *S. trutta*, whilst the east coast produces *T. salmonata*, Will. Of the Common Trout and Charr, one abounds in all the rivers and lochs of Scotland—*S. fario*. The various appearances assumed by this fish, have puzzled ichthyologists, and but one species amongst the number of these fish has been distinguished—*Salmo cæcifer* of Dr. Parnell. Another species has been distinguished by Sir William and Mr. Selby, which they have called, on account of its habits, *S. ferox*. This *was* confounded with, but is distinct from, the *S. lacustris*, Linn. It is found in England, in Ullswater. These may be closely allied to the fish of the continent, but Agassiz has pronounced them as different. The Charr cannot be said to be generically distinct from the last. They are not often caught by anglers, on account of their peculiar habits, and are not so well known as the preceding fish. Of the *Coregoni* there are two species—the one called *C. Willughbii*, by Jardine, and found in one or two of the lochs in the vicinity of Lochmaben, in the southern

part of Scotland; the other is found in Loch Lomond. Dr. Parnell thinks that there are two species of this fish, which he proposes to call *C. Lacepedei* and *C. microcephalus*.

Mr. Yarrell observed, with regard to the food of Salmon, he never could get a London fish with any food in its stomach. He supposed it might arise from the animal emptying that viscus immediately after it was caught. He believed the Welsh *Coregoni* to be different from those figured by Dr. Parnell.

Sir Wm. Jardine thought the fact of Mr. Yarrell's not obtaining food from the stomachs of the London Salmon arose from their being confined in nets for a long time before they were taken out of the sea, and thus deprived of the means of taking more food, while that which they had eaten was digested.

Mr. W. Thompson looked upon *Salmo albus* as the young of *S. trutta*, and *Salmo umbla*, the Charr of Ireland, as the Common Charr.—In reply to some remarks from Sir Francis McKenzie, Dr. Parnell stated, that the Parr (*Salmo salmulus*) was a distinct species of Trout, and that it had no connexion whatever with the migratory species of Salmon. He stated the characters by which it was distinguished from the young Salmon, and exhibited a specimen of each, of eight inches in length, taken in the month of May, in the river Tweed. The respects in which the two fish differed are as follows:—The form of the Salmon is long and narrow, the snout pointed, and the caudal fin acutely forked; the body of the Parr is thick and clumsy, the snout broad and blunt, and the caudal fin much less forked. The operculum of the Salmon is beautifully rounded at its posterior margin, with the basal line of union and the sub-operculum much curved; in the Parr, this part is rather produced, with the line of union straight. In the Salmon, the maxillary is short and narrow; in the Parr, it is longer and broader, particularly at the posterior free extremity. The teeth of the Salmon are long and fine—when recent, easily bent; those of the Parr are shorter and stouter, and resist much greater pressure. In the Salmon, the pectoral fin is short, not quite one-seventh part the length of the whole fish, with the fourth ray the longest; the same fin in the Parr is long, not quite one sixth part the length of the whole fish, with the fifth ray the longest, giving a form to the fin totally different from that of the Salmon. The pectoral, dorsal, and caudal fins in the Salmon are black: those fins in the Parr are dusky. The flesh of the Salmon is delicate, and pinkish, the bones rather soft, and the coats of the stomach thin and tender; the flesh of the Parr is white and firm, the bones stout and hard, and the coats of the stomach and intestines thick and tough. It was also stated by Dr. Parnell, that the Parr was not so common a fish as was generally supposed; and that those small fish, from four to five inches in length, found so plentifully in many rivers, commonly known by anglers by the name of Parr, were not all of one species, but the young of various species and varieties

migrating. Trout, in company with the young of the Salmon, with the true Parr (*Salmo salmulus*) and varieties of the common fresh-water Trout.

A series of admirably-prepared specimens were laid before the Section, the production of Dr. Parnell, in illustration of his and Sir Wm. Jardine's remarks.

Mr. Allis then read a paper "On the toes of the African Ostrich," for which see our present No., p. 68.

Mr. Trevelyan exhibited a young living specimen of *Coluber natrix*, of Italian writers, which was evidently a different species from *C. natrix* of Britain; also a specimen of *Polyodon folium*, a fish from North America; a small collection of insects; and a new species of *Urtica* gathered in the island of Elba.

Dr. Charlton exhibited a specimen of *Tetrao Rakkelhan* of Temminck, and was inclined to consider it nothing more than a hybrid between the female Capercailzie and the Black Grous. In favour of this opinion, he stated that the female of this bird had not been discovered, and yet every year *males* were transmitted to England. Mr. Tunstall, on the authority of some old Scottish gentleman, had stated, that the *hybrid* bird as well as the Capercailzie was formerly met with in Scotland. This Dr. Charlton considered as an argument in favour of its being a hybrid, for were it otherwise, it would in all probability, being a much smaller bird, have survived the extirpation of the Capercailzie.

Friday.

Dr. Handyside, of Edinburgh, read a paper on a species of *Sternoptyx*. He proposed making a new family, *Sternoptixineæ*. The present species he proposed to call *S. cælebes*. The following diagram will give its position:—

Osseous Fishes.
Subdivision, *Malacopterygii Abdominales*.
Family 4.—*a*. *Salmonidæ*.
b. *Sternoptixineæ*.
Genus 2. *Sternoptix*.
Species *a*. S. *Hermani*.
β. S. *cælebes*.
Genus 2. S. *Olfersii*.

The paper was accompanied by a dissected specimen and several drawings. The author stated that he was indebted to Dr. Richardson for the arrangement in the above analysis.

Mr. Forbes then read a paper "On the distribution of the terrestrial *Pulmoniferæ* in Europe." After alluding to the importance of the subject of geographical distribution, and its almost entire neglect, he stated, with regard to the distribution of the *Pulmoniferæ*, that in Europe they might be divided into five groups. The first of these divisions comprehends Scandinavia, Finland,

Northern Russia, the greater part of the British Isles, and Iceland, and extends itself into America in Greenland. The second, Germany (except Austria), Holland, Belgium, the south of England, the greater part of Switzerland, and northern and central France. The third, south of France, the Peninsula, the west of Italy, the western Mediterranean Isles, and extends itself into Africa (in Barbary), even to the Canaries, where a more tropical Fauna commences. The fourth comprises the east of Italy, Turkey, Greece, Dalmatia, and Wallachia, and extends itself to Asia Minor, and probably Syria. The fifth includes southern and perhaps Central Russia, extending itself over the Caucasus to Georgia. Besides these divisions, there is a large and important tract of inland country, including Austria, Hungary, Styria, Carinthia, and the eastern Tyrol. Throughout the world, he observed, it will be found that every genus has a generic locality, that is to say, that in a certain country its species predominate more than in any other part of the globe, and the typical forms of each of its groups are there represented. In Europe, we have a beautiful instance of this phenomenon in the genus *Clausilia*, as seen in the fourth division. He observed that each of the groups referred to these divisions were influenced to a great extent by five modifying causes, viz., 1, soil and rock; 2, mountain; 3, elevation; 4, sea; 5, transportation. The first, or geological influence, is of great importance, so much so, indeed, that a malacologist might almost name the structure of a country from the land shells inhabiting its surface. The rocks which have most influence are those of calcareous structure, and even the different formations of Limestone rocks supply localities to species peculiar to themselves. The second, or influence of mountain. The former exists in Britain; of the latter he had at present seen no instances. The influence of the neighbourhood of the sea is seen in the case of certain *Helices* and *Bulimi*, which never thrive inland. The fifth is rather a class of influences than a single influence, including as it does the effects of Man's agency in the introduction of species, both for domestication or by accident, as by ballast, which at the present moment is exercising a most important influence on the British Fauna and Flora; and the effects of natural agency, as in the transportation of species by rivers, &c. The effects of these modifying influences is the multiplication of the individuals of a species. There is also a climatic influence, which must perhaps be classed along with these, and the result of which is the superior development of size and colour in certain species. In conclusion, the author called on the naturalists of Great Britain to assist him in preparing data for the investigation of the distribution of land and fresh-water Mollusca in this country. For this purpose, he exhibited a map of Great Britain and Ireland, divided into districts, drawn up by Mr. Brand, of Edinburgh, for the Botanical Society of that city, with a view to the classification of the distribution of British plants. It is constructed on the most philosophical principles, and does the

highest honour to its author. It would be well, the writer said, to use the same map in investigations on the distribution of all departments of the British Fauna, as we never can arrive at just views by the study of one department alone.

Mr. Forbes was requested by the General Committee to draw up a Report on our knowledge of the geographical distribution of the Mollusca.

"A notice of the annual appearance of some of the Lestris tribe (Skuas) on the coast of Durham," was read by Mr. Edward Backhouse. He stated that the young of *Lestris Richardsonii* is the earliest in appearance on these shores. They came in September. They were followed in the middle of the month by *L. pomarinus*, and in October these were followed by the mature Pomarine Skua. The latter is a much more powerful bird than *L. Richardsonii*. Early in the autumn of 1836, he shot a specimen of what he believed to be the young of *L. parasiticus*. Its admeasurements are:—

Length	17 inches.
Expanded wings	32 "
Elongated tail feathers project	$0\frac{7}{8}$ths of an inch.
Bill from the forehead to the tip	1 inch.
Length of the bill to the gape of the mouth	$1\frac{3}{4}$ths of an inch.
Length of tarsi	$1\frac{3}{4}$ "
Middle toe	$1\frac{1}{2}$ "

Lestris catarractes (the Great Skua) is also met with, though rarely, on the same coast.

Mr. Selby had no doubt that the bird alluded to was the young of *L. parasiticus*. Mr. Thompson observed, that there had been some doubt as to the correctness of Mr. Selby, in figuring *Lestris Arcticus* as a British bird; he had, however, shot one at Belfast.—Dr. Charlton thought all the Lestris tribe might be considered British. There were two of these birds distinguished, which he thought the same, *Lestris Buffonii* and *Lestris Richardsonii*. He thought the first name should be retained.—Dr. Richardson observed that although the bird was named after him, he had no objection to the alteration. Mr. Swainson thought there was a difference, and had named them accordingly.—Mr. Jenyns exhibited two undescribed species of the genus *Cimex* as restricted by entomologists of the present day. One of these, which has been alluded to by Latreille, though never characterized, was found inhabiting in great numbers the nests of the common House Martin. The other was taken from a Pipistrelle Bat. It was proposed to call these two species *C. Hirundinis* and *C. Pipistrelli*. At the same time the peculiar characters were pointed out, by which each was distinguished from the other, as well as from *C. lectularius* of authors, the common Bed Bug.

Prof. Owen then gave the results of the report he had been requested to draw up on the *Marsupiata*. He referred his observations to three heads:—1. The Zoology of *Marsupiæ;* 2. Their relation to other animals; 3. The peculiarities of their reproductive economy.—1. In their zoological characters they presented as great variety as almost all the other Mammalia put together. In their food they were various. Those of New Holland were carnivorous. Some are insectivorous. Some inhabit trees, as the *Didelphes* and *Parameles;* and one has been described by Capt. King as having a divided hoof like *Ruminantia*. Many are strictly herbivorous, as the Kangaroo-rats, &c.—2. In their relation to other animals, he thought they ought to be looked upon as one group. For although they differed greatly amongst themselves, they had so many points of resemblance that they could not well be separated. Of these points the most remarkable were the development of the hind legs, the existence of the marsupial bag, the circulatory apparatus being less perfect than in the rest of Mammalia, the blood being returned to the heart by two veins, as in the heart of reptiles and birds; and in the hemispheres of the brain, which are not united by a *corpus callosum;* in this last respect, they are like the oviparous division of vertebrate animals, a fact first pointed out by Mr. Owen. In this they have the same relation to Mammalia, that the Batrachian have to the Ophidian, Saurian, and Chelonian, divisions of reptiles.—3. The reproductive economy was only slightly referred to. The Professor then entered into an account of their geological distribution. They had been found in the stonefield strata by Dr. Buckland; and Major Mitchell possessed many remains of these animals, some of them of a gigantic size.

Mr. Yarrell then read a paper "On a new species of Smelt." This fish was sent to the author by Mr. Wm. Ewing, of Glasgow, and was caught near Rothsay, in the Isle of Bute, where the fishermen were accustomed to see it, but not often. It was interesting as being a second species of the genus *Osmerus*, only one having been before known. He proposed to call it *O. Helindicus*.

Dr. Richardson, the secretary, read a letter from Mr. Jerdan, recommending the study of Botany in connexion with Agriculture. There was nothing new in these suggestions; but they led to a discussion on the propriety of forming a Section exclusively devoted to Agriculture.

The Rev. F. W. Hope read a paper "On noxious insects occurring in the year 1838." The author stated that the remarkable Apple-blight this year was produced by two insects; the first a little Beetle (*Anthonomus pomorum*), which attacks the blossoms in bud, and hinders their "setting"; the second is the *Aphis* or Plant-louse. This insect is well known, and has produced ravages this year on the Hops and Wheat as well as Apple. He thought the *Aphides* were more abundant in those Springs in which vegetation commenced under favourable circumstances, but afterwards suffered from cold and uncongenial weather. He

wished to know if *Aphides* were more abundant on one soil than on others, and also whether they were followed by *Coccinellidæ* this year, as they had been in 1829. On Wheat they are more abundant on the Spring than the Autumnal-sown crops. *Tipula Tritici* he had observed abundant in some districts this year. The pupa and chrysalides are not so numerous as in former years, but the caterpillars are very abundant; Wheat appears more damaged by *Aphides* than *Tipulæ*. He then alluded to the kind of information wanted in these inquiries, with regard to soil, atmosphere, cultivation, and varieties of Wheat, which might be supplied by the agriculturist; and regretted that there was not an agricultural section in the Association. He hoped botanists would supply information:— 1. On the species and varieties of Wheat grown in this country; 2. Diseases of Wheat arising from parasitic *Fungi* and other causes; 3. The provincial and local names of the kinds of Wheat. In conclusion, he suggested that a committee of the British Association, consisting of botanists, entomologists, and agriculturists, should be formed, in order to investigate the diseases incident to Wheat, and other kinds of agricultural produce.

Prof. Graham deemed this subject one of great commercial as well as scientific importance. Insects had produced great harm this year. The cold winter, he thought, would hardly explain it; as, for example, Spring-sown Wheat was most attacked. More facts were wanted on this important subject. He had seen a large collection of drawings of insects destructive to grain, by Francis Bauer, the property of the late Sir Joseph Banks; he thought it would advance such inquiries if the Association would assist in publishing those drawings.

Dr. Greville remarked that the *Aphides* which were abundant one year were not to be found the next.

Mr. Monk had observed the attacks of some insects to be periodical.

Mr. Hope thought that weather had but little influence over the insects. When vegetation made sudden and extraordinary progress, insects frequently appeared, but they perished provided the plant remained in a state of health.

Dr. Richardson then exhibited four species of Pouched-rats, and he was aware of two more species that had been hitherto undescribed. All these were usually looked upon as one species.

The meeting of the Section then closed for the year, the Chairman, Sir William Jardine, having congratulated the members on the unusual extent, variety, and interest of the papers of this year.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

ROCHDALE LITERARY AND PHILOSOPHICAL SOCIETY.

A Society has recently been established at Rochdale, Lancashire, under the above designation. Mr. John Roby, a banker in that town, well known as the author of *Traditions of Lancashire*, and likewise of a *Seven-Weeks Tour on the Continent*, a short time since signified his intention of delivering a course of ten lectures on the Linnæan system of Botany. The Society, desirous of rendering these lectures more generally useful, requested that he would allow the public the option of attending, instead of confining the admission to members of the above Institution. The theatre was accordingly engaged for the purpose, all classes being thus admitted at a very low rate.

The first meeting took place Aug. 1, 1838, and the crowded state of the building up to the concluding lecture, sufficiently testified the interest excited in the audience, and the pleasing mode in which the instruction was conveyed. A great number of diagrams and drawings rendered even the most dry and difficult parts of the subject easy of comprehension.

When we state that more than two hundred drawings of plants, showing their minutest structure, and large enough to be distinctly seen in every part of the house, were exhibited, our readers may form some idea of the immense labour undertaken gratuitously by Mr. Roby for the instruction and gratification of his fellow townsmen. The audience, crowded to the ceiling, rose at the concluding lecture, and gave a vote of thanks by acclamation.

We can only regret that Mr. Roby has not hitherto been induced to extend the benefits of his labours; having declined a request, from the Mechanics' Institute at Manchester, that he would deliver the course in their handsome and capacious building.

We now proceed to lay before our readers a brief summary of the lectures. They aim, it will be perceived, at novelty rather as regards manner than matter.

A lecture, to be generally useful, as well as interesting to a mixed audience, must necessarily appear trite to some, and at the same time difficult, if not perplexing, to others. Information which, to those who have made some progress in science, may appear useless, to others, entirely ignorant on the subject, often seems abstruse and hard to attain. Hence the difficulty a lecturer has to encounter in addressing a promiscuous audience, compared to that of a master or teacher who has the opportunity of dividing his pupils into classes according to their different stages of attainment, and who is thus enabled to give to each

division that portion of knowledge which to the higher classes would be useless, and to the lower unprofitable.

Nevertheless, these lectures are attempted with a view of ascertaining whether or not Botany can be made the subject of a popular as well as instructive course. Hitherto, as far as we can judge, the attempt has failed. Let us try and profit by example. One principal cause may have arisen from the lecturer not having been sufficiently simple *at the onset*—not beginning with the A, B, C, no wonder he has failed in teaching to read. Giving credit to his hearers for more knowledge than they possessed, or rather taking for granted that all had some knowledge of the subject, some elementary attainment requisite to a proper understanding of terms and ideas, the major part of the audience have become weary and uninterested. In place of being enabled to ascend pleasantly step by step to the top of the ladder, they have remained below, whence the astonished and disappointed leader has in vain urged them on to follow.

Thus far to meet any remarks naturally suggesting themselves to those who have made some progress, and as our apology for considering all, at the outset, entirely ignorant on the subject. Those who have patience to endure so long, will find in our now shallow stream, just bubbling from its source, depths where the giant may swim, though at first a child may wade!

The science of Botany does not require any abstract process of study; and though no royal road is open to knowledge, yet the mode of acquisition may be so simplified as to make that easy and pleasant which heretofore was rugged and difficult to attain. Botany more than any other science has been supposed by most persons to depend for its cultivation on a dry and elaborate transfusion of some hundreds, nay thousands, of hard, "jaw-dislocating" names, and names only, without any definite ideas, save that they are attached to some plant or plants, among the myriads that surround them, as, for instance, *Tussilago farfara*, *Leontodon taraxacum*, &c. &c. This opinion prevents many from making progress, or even commencing a study, one of the most pleasant and instructive to which the mind can have access.

In the first place, your vocubulary of terms must be obtained from the plants themselves, in the woods and fields, where, if possible, the lecturer would take you. In default of this, representations of their structure will be brought before the eye. These, and these only, are our vocabulary, which will furnish you in a very little time with a sufficient stock of ideas to comprehend the whole Linnæan system, and enable you to find out the name of every plant you meet with.

One great advantage attends botanical pursuits, viz., that they may be pursued at periods when minutes, nay days, would otherwise perhaps be wasted; as well as during the hours of necessary exercise, either riding or walking. Nature is the best teacher; and to her you must go for knowledge, or rather for subjects on which

your previously-acquired knowledge must be exerted; and it is astonishing how soon the eye acquires the power, the faculty of discrimination. A new sense seems to open on the mind—a relish, a delight in those departments of Nature, where previously all was either void, or a mass of unintelligible inextricable confusion.

But the most important inquiry is, How are we to learn? "As a little child," must be the answer. As a child learns its mother-tongue, a thousand-fold more difficult than anything you are called upon to attain through the medium of these lectures, which, it is confessed, are not so much for the purpose of teaching the science as to point out the best mode of acquiring it for ourselves. Now, a child does not obtain language through the medium of grammars and dictionaries, but by daily, hourly observation. For instance, in your walks you pluck a flower without the least notion of its name or properties. Having, however, learned a few of the simplest terms of the science (which will shortly be explained by the aid of diagrams, through the medium of that best of all teachers, the eye), you commence with the practical part of Botany immediately.

To shew, even in this introductory lecture, how easily and pleasantly the science may be acquired in the mode we have adopted, we give you credit, a few moments only, for a little more knowledge than most of you possess; but the terms will be easily understood by means of our drawing.

Here you observe what is called a *flower;* which, being a term for millions of productions of the like nature, produces no definite notion in the mind by its use or application. Let us, however, examine it a little closer; this flower is composed of several parts, which parts, be it remembered, in their natural state never alter. Hence, to the antipodes, all groups of plants, genera and species, are built precisely on the same model—a wonderful illustration of the unity of that Creative Power which has fashioned every thing according to the council of His own will!

How, with this fact, written as with a sunbeam through the whole range of created existence, can philosophers say, or even imagine, this great and wondrous plan has originated in chance, or, to use a well-known phrase, "by a fortuitous concourse of atoms!"

Let us now examine this flower more attentively, Linnæus having taught us to make it the first object of our study.

These four divisions are called *petals;* never mind why at present—a child does not ask the derivation of every new word he learns; that would so harass and incumber him, he would be unable to proceed. Let us pull them off, and here is the situation of affairs. These little processes, tipt with powdery knobs, are called *stamens.* You observe two of these, and, according to the system we purpose, in the first place, to adopt, the classes or great divisions of all plants,

known and unknown, are comprehended in *twenty-four;* which classes are known by the number and situation of these parts, called stamens. Counting them, and finding two, indicates that we are to look for their plant somewhere amongst those with two stamens only; being the *second* class in the Linnæan system, called *Diandria.* Do not take fright at the name because it happens to be Greek. It will soon become familiar as we proceed; for by always associating the term *Diandria* with *second* class, it will just as readily excite the idea of *two stamens* as the term second did to the child when he was helped a second time to fruit and confectionary.

Having made this prodigious stride in our botanical knowledge—for be assured it is one—let us pause and consider its value and importance.

Suppose 100,000 different sorts of plants to exist, not individuals but species; by species are meant, for instance, Roses, or Buttercups of different sorts, not each individual Rose or Ranunculus throughout the world. Suppose, for the sake of illustration, each of these twenty-four classes contains an equal number of such species; then, by rejecting every plant in your botanical lists having stamens less or more than two, in place of 100,000 you have little more than 4,000 to hunt through, quite plenty, but still an immense advantage is gained; almost at the outset of your studies being enabled to determine with the utmost certainty that 90,000 of them are not the plants of which this drawing is a specimen. Let us try, however, if we cannot still further circumscribe our field of observation. Rising from the seed-vessel is another, but only one small process; this, called the pistil, is the duct or channel by which the seed itself is fertilized, which will be shown and explained when the physiology, the structure, and functions of plants come under our observation.

From the number of pistils Linnæus again divides the first ten classes into *orders;* consequently the flower at present under examination is placed in the first order of the second class, called *Monogynia.* Thus we have before us *Diandria Monogynia*, or two stamens and one pistil. Now suppose again that our 4,000 species, all with two stamens only, are divided into plants having from one to ten pistils, and each division composed of an equal number, as before, divided by ten, our examination of plants throughout the whole range of creation is now limited to 400 only. But the flower under notice is a British plant, indigenous, or growing wild in this country, so that here is another means of shortening our labour. In looking over a list of British genera, other and lower groups—which will be examined more particularly in our subsequent lectures—we find only ten of these having two stamens and one pistil. Each has permanently-distinctive characters, easily ascertained from books on the subject, and our object is now to find out in what particulars the plant before us differs from the rest.

On examining its characters, even by the very slight knowledge already attained, we soon perceive one prominent distinction, which the other nine genera do not possess, viz., in the corolla, the lower segment being much smaller, every way, than the other three. Now let us look down this tabular view of the genera,* under the second column, headed "*Corolla*" (where all the peculiar forms of this part of the flower are noted), and see if we find any allusion to this circumstance.

Here we read, "lowest segment smallest," in the third genus, *Veronica;* nor is this distinguishing characteristic observed in any other. We have before us therefore the genus Veronica or Speedwell, and on referring to descriptions of these plants, their uses, habits, &c., may be ascertained. At present we would recommend you to study genera only. Learn to discriminate these well, and a knowledge of species will easily be acquired. Dr. Withering advises the young student to confine himself to the examination of genera alone for a considerable time.

Observation, and that alone, must be your teacher. Wearisome tasks committed to memory are worse than useless. Reasoning, description, and the like, always suppose and refer to knowledge already acquired. You require food ere you can digest and assimilate for the wants and functions of the system; in like manner observation, the great Book of Nature, must first furnish you with materials for the acquisition of our science. The eye being the principal inlet to knowledge, to this therefore we appeal. Knowing how to use the eyes is an immense advantage, and to some, probably, like the opening of a new sense.

Those who have begun to read botanical works are doubtless aware of the great preliminary labour that must be gone through before any practical results can be obtained. Your tools have yet to be made ere you learn their use. We will try if we cannot borrow them ready to our hand.

Writers on Botany generally begin where they ought to finish. For instance, all sorts, shapes, qualities, &c., of roots, stems, leaves, are described, useful only in distinguishing species. These, however, must be studied, and committed to memory along with whole pages of terms outlandish and ill-understood. No wonder the student is soon tired, and few, even of those who set out courageously, ever retain sufficient information to enable them to put in practice what knowledge they have with much time and assiduity obtained. Being of no immediate practical utility, tedium is followed by disgust, and the study is abandoned. One instance, and not a solitary one—Out of an elementary botanical work of 376 pages, professing to be the most easy and pleasant road to an acquisition of the

* Mr. Roby intends publishing this tabular view of the British genera, with an abridgement of his lectures, illustrated by wood-engravings, provided he finds that sufficient encouragement is likely to be afforded to the undertaking.

science, 170 of them are occupied, and must be learned, before essential characters—or such as will enable you to discover the name of a plant—are even noticed.

In these lectures we purpose to use no technical terms (those peculiar to the science) without their corresponding ideas,—such ideas given either by living specimens or drawings. We will never, if possible, make use of signs previously to the things signified. Terms of art are always a hinderance to the student, unconnected with the objects to which they refer. Place these before the eye, and the common principles of association will always bring them together. To this end we shall teach the terms applied to different parts of the fructification, by placing them constantly before you. Of course something must be learnt respecting preliminary terms that shall convey accurate notions of such parts to the mind; but we do not intend giving you a dry catalogue of names merely; for, in our mode of instruction, whilst acquiring these, a knowledge of the flower itself will be obtained, rendering your task easy and familiar, which otherwise would be tedious and, in all likelihood, unprofitable.

As before stated, the great end we have in view is *teaching you to observe*, and to observe accurately. Begin at the beginning, and we shall no doubt pass on pleasantly together.

After this introduction, the lecturer examined a few obvious and well-defined groups of plants, by means of drawings and dissections; thus conveying to his audience in a familiar manner a knowledge of all or most of the terms required previously to a clear understanding of the Linnæan system.

The Liliaceous, the Cruciform, Papilionaceous, Labiate, Umbellate and Composite tribes, were minutely examined, occupying altogether three lectures of the course. In three or four hours as much or more knowledge, probably, was obtained, not only in nomenclature but in structure, as, unaided, or even in the ordinary plan, is often gained in as many months; the science being, by this means, shewn not to be a mere labour of memory, or a catalogue of hard names only, but a study of facts and observations, without which nothing either useful or pleasant can be obtained. The following observations concluded the third lecture:—To become botanists we must examine plants for ourselves; and, as it is necessary to learn the names of persons and things before we can talk about, or reason upon, them; likewise to ascertain the meaning of words before we can apply or analyze them; so the names of plants must be learnt, ere we examine their nature and properties.

Though as yet acquainted only with masses, or characters of large and easily-understood groups of plants, yet these tribes comprehend one-fourth at least of the whole vegetable world. You have likewise obtained some insight into the mode and advantages of classification. Knowing the place a flower occupies in the great order of Nature, or even its artificial arrangement, will give you at the

same time, generally, an idea as to its habits, properties, and place in the great scale of creation.

These introductory lectures are amply sufficient as a bird's-eye view of the whole,—a balloon-like glance over this wide and interesting field. You have now a perception of the bearing and position of the main roads or thoroughfares; and he who is familiar with these will soon become acquainted with the lateral, intermediate streets, lanes, and alleys, in this mighty assemblage of living forms, presenting materials for close and diligent observation.

Lecture IV. On Classification.

On looking back, you will be astonished at the amazing progress that has been made. You are now acquainted with a considerable number of botanical terms, and their corresponding ideas; fixed, too, in the memory by association with the plants themselves in such wise that they will not easily be forgotten. In fact, without any more preparation, you are now able to enter upon an examination of the system invented, or rather discovered, by Linnæus, which many of you no doubt have hitherto been prevented from studying, in consequence of the terms or language in which it has been taught.

We now proceed to shew, that, so far from this system being a science entirely of names, and outlandish words, overloading and harassing the memory, it is a pleasant and agreeable, nay easy study, storing the mind with facts and ideas of the most useful kind.

Of course, to class any thing we must either learn or invent a *system;* but we cannot expect the whole of such a system arranged entirely in *natural* classes or groups such as have hitherto been noticed; or, in other words, an arrangement like that of drugs in the apothecary's shop, is quite as useful though they be not classed according to the natural system, or their properties, such as opiates, sudorifics, cathartics, &c., but in alphabetical, or the most artificial, of all systems. This is the best illustration we can afford as to the difference between natural and artificial systems of arrangement; the latter always depending on some arbitrary mode of one sort or another.

Linnæus's system partakes in some measure the advantages of both. If the order of Nature were perfectly unveiled, then her arrangement would doubtless be the best we could adopt. But to our imperfect faculties, the operations of Nature, the real types and organization, the analogies of living things, will probably be for ever hidden; hence we are obliged to use artificial helps to knowledge in this imperfect and finite state of existence, where the highest attainment we can possibly achieve is to feel, to comprehend *how little we know!*

In commencing this system, your previous knowledge will be found extremely useful. Happily, too, it preserves intact the natural tribes previously studied.

Do not be alarmed at the word *system*. The whole Linnæan mode of classification is comprehended in this large scene, painted expressly for our lectures, in order that you may have it constantly before the eye, and that it may be thus learnt by constant reference, along with those plants requisite to illustrate the different classes and orders of the system.

In this lecture they were examined in detail.

Lecture V. Commencing with the Genera.

No system, not even our boasted natural arrangements, can be perfect. The Linnæan has its incongruities, but these by no means detract from its value. The separation, in most cases unavoidable, from their natural groups or affinities, is no obstacle to our obtaining a knowledge of their names. These must be ascertained before we examine their mutual relations and properties. The object of Linnæus was to form a system which might facilitate our investigation of the vegetable world, enable us to refer a plant to its proper genera and species, and also aid the memory in preserving its name when ascertained. These objects the Linnæan is, beyond all others, best enabled to effect, as admitted even by those who complain most of its defects, but who notwithstanding owe much of their knowledge to this system.

For beginners none other is capable of affording any sufficient aid. Names, we repeat, must be learned before the properties and organization of plants can be usefully studied, as letters must be known before we are able to read, and principles before they can be reduced to practice. By comparison alone we distinguish plants like other objects, differences, some near, some remote. All methods of arrangement must be more or less artificial, and like systems of artificial memory (for all scientific systems are nothing more when properly investigated), that is the best which enables us to comprehend and remember most, and from which we can most rapidly gather, define, and associate ideas. Some philosophers, in their great pride and wisdom, have rejected system altogether, because, forsooth, Nature knows nothing of it. She does not work according to any of these rules. Be it so; yet we will not despise the means, poor, scanty and imperfect though they are, by which we gradually acquire, and remember what we acquire; any more than we would despise an alphabetical arrangement of words, the most artificial that can be devised, and throw aside our dictionaries, because those words are not placed according to their analogies, affinities, or derivations.

A genus, for instance *Veronica* or *Ranunculus*, has, besides its permanent characters in class and order, others which, though not so general and comprehensive, are yet fixed and unchanging as those by which its class and order are determined. These characters are founded in Nature, and therefore constitute

a natural family or group. The most obvious generic character of *Ranunculus* is a little scale at the claw of each petal; that of *Veronica*, the lowest segment of the petal smallest. Genera consist of species named from some obvious appearance, often in the leaves, stem, &c.; likewise from their properties and habits, such as narrow, broad, hairy-leaved; climbing, field, meadow, wood, rock, &c. &c.

Suppose in the month of June and July, when the Flora of our country is in its utmost brilliance, a profusion of wild Roses are blooming on every hand, some climbing, throwing their graceful festoons above our heads; others, like humble shrubs, or crawling scarcely above our feet. In spite of these differences (and there are twenty or thirty species of *Rosa* indigenous to Britain), we see a general, or family likeness, which immediately determines them to be Roses, though we have not the slightest knowledge of those characters wherein the genus resides, or is determined. This is a parallel case with many others of the more obvious genera, shewing them to be truly natural groups dependent upon common characters founded in Nature.

If a class bring together a number of plants agreeing in one common character, and an order, agreeing not only with them, but likewise presenting other characters, in which part of that class is deficient, a genus descends still lower, and exhibits a group of plants agreeing in all these characters besides others peculiar to that genus. Genera existed before all systems; *e. g.*, Roses, Lilies, Ranunculuses, &c. Men were, in consequence, led first to consider plants in these sorts of groups, before they could mark or examine their essential differences. This generic character is stamped so evidently on a considerable portion of the vegetable world, that there are few persons unable to distinguish them. A farmer, as well as a professor of Botany, can distinguish a Bramble from a Thorn, a Rose from a Gooseberry, or a Nettle from a Lily.

But a genus, to be perfectly good and distinguishable, ought to possess artificial characters as well as resemblance. Thus the genus *Rosa*, besides resemblance, is distinguished from *Rubus* (Bramble) and all the other genera included in *Icosandria Polygynia*, by its fruit being urn-shaped, and formed out of the calyx.

Every genus is composed of a certain number of species, which have likewise a common agreement in characters, besides their essential differences from each other. Species are composed of individuals, and here we arrive at the end of our system. These individuals too have characters constant and unchanging; they severally or mutually produce their like, and maintain their identity in one unvarying type. Sometimes, from cultivation, or accidental mixture, intermediate individuals, called varieties, are occasioned; but these do not produce their like from seed, and will soon, if let alone, return to the original model. But most of these hybrids or mules are sterile, incapable of producing seed, and only perpetuated by shoots or grafting. Individuals may agree in their essential specific

characters, and yet differ amongst themselves by some slight or accidental circumstance only. This difference constitutes a variety, and is not permanent. It arises generally from soil and climate. Size, colour, smoothness, or some other character of slight importance, does not affect their specific distinctions. Double flowers and different colours are mere varieties. If, for instance, we sow the seeds of a white variety of the Common Lilac, it produces very few plants of the same colour. The greatest number return to the original species, and produce the *Lilac*, so called from its colour.

Thus, characters which distinguish classes, orders, genera, species, and varieties, embrace every condition the whole vegetable kingdom can assume, and are therefore the complete fabric of our system.

To LINNÆUS we owe that beautifully simple mode of assigning trivial names as specific, along with those of the genera. For instance, round, short, long-leaved, water, meadow, hairy, smooth, climbing, &c. &c. Before his time almost every plant had a different name, unmeaning, obscure, and accidental as our own surnames; nay, sometimes the same designation was given to plants essentially dissimilar. LINNÆUS thus gave a precision to the science as great and useful as that of assigning Christian names to our surnames.

The remaining lectures, being chiefly occupied by minute examinations of the most prominent genera in each class, do not admit of abridgment. In conclusion, we may observe that we shall be very glad to hear of similar gratuitous expositions of the various departments of Natural History, by those who are competent to the task; and we hope Mr. ROBY's example may stimulate others to the like exertions.

REVIEWS OF NEW PUBLICATIONS.

British Oology; being Illustrations of the Eggs of British Birds, with Figures of each Species, as far as practicable, drawn and coloured from Nature: accompanied by Descriptions of the Materials of their Nests, Number of Eggs, &c. By WILLIAM C. HEWITSON. Newcastle-upon-Tyne: *Currie and Bowman; W. Edwards*, London. June, 1838. No. xxxvii. Royal 8vo.

WITH this number concludes the only work of any value in the same line extant. It contains illustrations of several eggs, an index, an interesting preface, and a list of subscribers. The species included are, the Dartford Whinling (*Melizophilus provincialis*), the Glaucous Gull, the American Coccyzus, the Wood Sandpiper, the Common, Scaup and Tufted Pochards, the Kentish Plover,

the Dotterel Plover, the Great Snipe, the Ivy Wren, the Common Merganser, the Golden-crowned Kinglet, and the Fiery-crowned Kinglet. For his specimen of the egg of this bird, Mr. Hewitson is indebted to our correspondent, Thomas Meynell, jun., Esq.

Among the subscribers we notice the following names :—J. J. Audubon, Prof. Bell, Charles Conway, Henry Doubleday, Rev. Thomas Gisborne, John Gould, J. E. Gray, Gen. Hardwicke, Sir W. J. Hooker, J. D. Hoy, Sir W. Jardine, W. A. Leighton, R. Leyland, Dr. Shirley Palmer, W. H. Rudston Read, J. D. Salmon, P. J. Selby, Prof. Temminck, Dr. Vigors, M.P., W. Yarrell.

The work is divided into three volumes ; but we think it might advantageously be bound up in one. Ornithologically speaking, the figures are for the most part unexceptionable ; but in an artistical point of view, we cannot but reprehend the style in which the eggs are shaded. The everlasting hard line stretching lengthways along each figure has a very bad effect, and the specimens have generally too flat an appearance. As this circumstance was pointed out to the author in time to remedy it in his later numbers, we have no scruple in drawing attention to it now the work is finished. This defect, however, will scarcely lessen the value of the *British Oology* in the eyes of our scientific readers.

We need hardly add, that every one at all interested in the eggs of British birds, will place Mr. Hewitson's excellent work in his library, however select it may be. From the appearance of the first number, many years ago, to the present time, we have taken the most lively interest in the success of this publication ; and, pleased though we are at having seen it safely and satisfactorily concluded, we shall miss the gratification hitherto afforded by the periodical appearance of its instructive parts.

The Naturalist's Library. British Quadrupeds. By W. MacGillivray, A.M., F.R.S.E., &c. London : *S. Highley.* 12mo. 1838.

The brief memoir which is prefixed to this volume of the *Naturalist's Library*, considering the paucity of materials, does great credit to the author, and will, we doubt not, be perused with interest. The subject of it (Ulysses Aldrovandi), though seldom quoted now as an authority, was one of the first promoters of Natural History, when light began to dispell the gloom of the "dark ages." Much was necessary, then, to attract attention to the science. In accomplishing this object he was assisted by Rondelet, Belon, Gesner, &c. ; but the depth of his zeal, the almost unparalleled exertions he made, the knowledge he accumulated and communicated, and the vast amount of property he devoted to it, would justify us in styling Ulysses Aldrovandi the father of modern Natural History.

The date of the birth of this eminent man is a matter of question; some contending for 1527, and others for 1522. Our biographer inclines to the latter opinion. He was born at Bologna, at which city and at Padua his education was conducted. For a few years he devoted himself to the study of Law, in which he made so great proficiency that (to use his own words) he "was urged to accept the badges of its highest honours." His natural bias of mind overcoming these tempting considerations, he bade farewell to jurisprudence, and devoted his whole attention to Natural Philosophy. Having taken his degree in Physic at the University of Bologna, in 1553, we find him a few months afterwards occupying the chairs of Philosophy and Logic and of Natural History. At this time, it is said that he also delivered lectures on Botany, and taught Physic, within the walls of the University; and that he likewise "became occupied with the laborious professional duties of the healing art." In the midst of all these engagements, ALDROVANDI made rapid progress in collecting materials for his ponderous "*Opera*" on Natural History, the idea of publishing which he appears to have early entertained. Fifty years having been occupied in preparing this work for the press, its author only lived to see the publication of six volumes; the remaining seven were superintended by his friends and pupils. It embraces the whole range of Natural History, and now exists a monument of its author's indefatigable industry and perseverance. Considering the age in which it appeared, the praise bestowed upon it can scarcely be too high; much, however, that is fabulous and crude, together with many discrepancies in arrangement, appear in his pages. ALDROVANDI died in 1605, having for some time before his decease lost his eye-sight, which to a zealous naturalist must be considered a severe deprivation. But this is not the only calamity that befel him, if we believe the report credited by several authors, viz., that he "died a neglected pauper in the public hospital of Bologna, loaded with years, and blind, a remarkable instance of public ingratitude." The biographer combats this belief, in our opinion, very successfully. Indeed it is scarcely credible that such would be the circumstances of a man who enjoyed *substantial* support from Pope CLEMENT VIII., SIXTUS VI., and the Senate of Bologna, and whose manuscript that "august assembly" liberally rewarded several eminent naturalists for preparing for publication.

The account of ALDROVANDI's zeal is very interesting. His great and ever-present desire seems to have been to explore the beauties and wonders of Nature's kingdom. Must it then be considered merely by *chance* that his portrait (prefixed to the present volume) displays a *very large development of the organs of Form and Individuality?*

Our space will not allow us to do more than barely notice Mr. MACGILLIVRAY's portion of the work. We must content ourselves, therefore, by recommending

it to the notice of our readers, especially to such as have not procured the elegant though more expensive work of Mr. Bell. The matter is well condensed, and the student will find under each of the animals much information on specific characters (including careful admeasurements), habits and distribution. The plates manifest the usual fault of over-colouring, and in some instances the attitudes are neither well chosen nor well executed. Owing to the number of plates being restricted to thirty-four, several of the Bats and Seals are not figured. The omission, though necessary, is to be regretted.—P. R.

LITERARY INTELLIGENCE.

Just published, in two vols., post 8vo., with illustrations, a *Seven-Weeks Tour in Belgium, Switzerland, Lombardy*, &c., by John Roby, Esq., M.R.S.L. This work, and the two first parts of Prof. Jones's *General Outline of the Animal Kingdom*, will be reviewed at an early opportunity.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Elater crocatus.—I have lately seen announced in the *Entomological Magazine*, as new to Britain, *Elater crocatus*, in Shirewood (qu. *Sherwood?*) Forest. I took a single specimen on a Hazle near the banks of Winander Mere (or Wray Tarn?), so far back as June 11, 1827. I then considered it to be *E. pomonæ*, but on comparing it with some specimens in London, I find it is *E. crocatus*. —J. C. Dale, *Glanville's Wootton, Dorsetshire, May* 15, 1838.—[This insect has since been included in the second edition of Mr. Curtis's *Guide*.—Ed.]

How to kill Wasps.—The usual plan adopted by gardeners and others of destroying these voracious plunderers, with saucers and bottles of treacle, or sugar-water, is very bungling and uncertain. This plan is good as far as it goes, but it is only a "half measure," for numbers of the Wasps crawl out and escape in all directions. As soon as a Wasp has entangled itself in the treacle, let it crawl out, and then place a drop of camphorated spirit upon its head, when it will almost instantly expire. The same dose may be exhibited with great effect, and no inconvenience, to the hosts of Wasps so numerous and so troublesome in houses. A weak solution of turpentine will succeed equally well. We should

think also that it would form the safest and most expeditious mode of destroying the nests of these insects. A very small quantity seems to intoxicate the little creatures, but a full drop produces immediate death. All Hymenopterous insects yield very readily to this treatment; Earwigs, Beetles, &c., much less so; and it scarcely seems to affect some classes at all. Otherwise a bottle of the mixture might have formed a useful element of an entomologist's paraphernalia. We may observe, that the same drop which will kill a Wasp will likewise serve as an antidote to the poison communicated by its sting.—Ed.

Variety of the Corn Bunting (*Emberiza miliaria*, Linn.).—This species, as well as the Blackbird, seems subject to variation in plumage. One in my possession, shot near Flamborough Head, has an equal mixture of white and brown.—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.—[We possess a variety of this bird similar to that mentioned by our correspondent; and have seen another of the same kind in the beautiful collection of W. H. Rudston Read, Esq., at Frickley Hall, in this county.—Ed.]

Nest of the Martin Swallow (*Hirundo urbica*, Linn.).—The great body of the Martins that visit this district, instead of attaching their nests under the eaves of the houses in this town, have resorted to the extensive Chalk-quarries in the vicinity of Guildford and Wanborough, for the purpose of nidification at the latter place. I observed, a short time since, no less than 150 nests attached to the face of the rock under the projecting ledges. Here they nestle in perfect security. The material they make use of in constructing their nests being powdered Chalk, it is with some difficulty that they are to be distinguished on the face of the rock. Now and then a belt of darker material intervenes in their otherwise marbled masonry.—J. D. Salmon, *Godalming*, *Surrey*, *Aug.* 13, 1838.

BOTANY.

Important to Lovers of Potatos.—Cold wet summers are extremely injurious to the interests of the lovers of Potatos. For the tubers (or "underground stems") of this plant owe their peculiar flavour to the presence of amylaceous matter, or starch, which is produced by the action of light fixing a large amount of carbon in the tissues. The flavour of the Potato is in direct ratio to the proportion of starch; and hence the importance of light to the tubers. The presence of carbon, by the action of light, has likewise been proved to be equally indispensable to all plants. Light decomposes the carbonic acid in the various parts, producing the different principles which impart the flavour peculiar to each kind of fruit and vegetable, as, for instance, starch in Corn, tannin in the Oak, sugar in the Cane, gum in the Plum and Cherry, and so on.—Ed.

Failure of Apple-blossoms in 1838.—There has been a very general failure of Apple-blossoms in some of the best cider parishes in this neighbourhood. The

orchards have been infested by a caterpillar about half an inch in length, with light green sides, dark green back, and of a most prolific and destructive character. Myriads of these insects have been found on every tree in the districts where they have made their appearance, and stripped them not only of their blossom, but every leaf. The appearance of the trees is truly distressing, and unless one saw them it would be difficult to believe the devastation they have created. The trees are without a leaf, and have these destructive insects swinging from them by a sort of web in numberless festoons; and the mischief is, that where they have made their appearance they have not only destroyed the prospect of a crop for the present year, but the year following; leaf, blossom, and bud, have all disappeared before them.—*Western Times, June*, 1838.

GEOLOGY.

The Mantellian Museum.—We are happy to hear that the valuable and celebrated collection of Dr. Gideon Mantell has been purchased by Government, and will be removed towards the close of the year from Brighton to the British Museum. The specimens amount to nearly 20,000.

Footsteps of *Cheirotherium*.—We have received some well-executed lithographic drawings representing the footmarks of *Cheirotherium* lately discovered at Storeton-Hill Quarry, Cheshire, in the New-Red-Sandstone formation. We believe Dr. Grant—who was lecturing at the Liverpool Mechanics' Institution at the time the impressions were discovered—considers that the large ones are the footsteps of a reptile, and not of a Marsupial animal. Capt. Thomas Brown attended one of the meetings of the Liverpool Natural History Society while the affair was on the *tapis*, and suggested that the animal could not possibly belong to the Opossum family, the members of which take leaps, whereas the present animal has evidently walked, and in so doing appears to have crossed its legs, as indicated by the impressions on the large slab. The drawings are lithographed for the Liverpool Natural History Society.—Ed.

Origin of the World.—The *Doncaster Chronicle* of Oct. 13 contains a letter from the Rev. W. Cockburn, Dean of York, to Prof. Phillips, complaining that he cannot comprehend the various geological theories of the origin of the world, and requesting the professor to expound his views on the subject. Prof. Phillips, in reply, refers the Dean to the statements contained in his published works, and candidly states his unwillingness to increase the number of *theories* on this head. At the same time he observes that he has neither the time nor the inclination to enter into the lengthened statement necessary to explain his opinions to a non-geological inquirer, in an epistolary form.—Ed.

Edwd Swan.

Lith.d for Neville Woods Naturalist.

J. Graf. Printer to Her Majesty.

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THE NATURALIST.

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NATURAL HISTORY OF THE ARTAXERXES BUTTERFLY.

(*Polyommatus Artaxerxes*, Fab.).

By Henry Buist.

Perhaps the history of none of our British Butterflies is more interesting than that of the beautiful little "Artaxerxes," which (with the exception of the Arran Brown Butterfly *Hipparchia ligea*, for which no other British locality is known than the Island of Arran, where it was first found by the late Sir Patrick Walker and A. MacLeay, Esq.) is the only Butterfly found in Scotland that is not also met with in England. For a long period the only locality known for *Polyommatus Artaxerxes* was Arthur's Seat, near Edinburgh, where it occurred in such plenty that all the English cabinets, and the principal foreign ones, were abundantly supplied from that locality. But since 1834, when the meeting of the British Association was held in Edinburgh, I understand that scarcely a specimen is to be seen. I have, however, heard of several having been taken this season. It was long much valued by English collectors, some of whom, we are informed by Donovan, were in the habit of placing a coloured drawing of the insect in a corner of their drawer that they might obtain credit for having an object of such rarity in their collection. Other collectors undertook a journey to Edinburgh (a journey neither so quickly nor so easily performed then as it is at the present day), chiefly with the view of procuring specimens. The description of Fabricius, who appears never to have seen a specimen, was taken from a drawing by Mr. Jones, of Chelsea. But as the taste for the study and collection of insects becomes more general, it is not to be wondered at that insects which formerly were considered rare should be found in other parts of the country. We now have the following localities in addition to Arthur's Seat, viz., "the Pentland Hills, Flisk, Fifeshire, near Queen's-ferry, and in the vicinity of Jardine Hall, Dumfriesshire."* Since the publication of the above localities, we have the announcement of another in Charlesworth's *Magazine of Natural History*,

* Jardine's *Naturalist's Library*, Entomology, Vol. III., p. 246.

Vol. I., p. 275, by Mr. William Gardiner, Jun., who states that "this little Butterfly, once esteemed by entomologists as an object of the greatest possible rarity, and still considered as a very local species, occurs rather plentifully every season at the East end of Wills-braes, about a mile to the westward of Dundee, on the banks of the Tay. The locality is a precipitous bank, overlooking the river, and covered with a profusion of Grasses and wild flowers, among which *Spiræa filipendulæ*, *Geranium sanguineum*, *Rosa spinosissima*, and *Helianthemum vulgare*, hold a conspicuous place." I have now much pleasure in introducing to entomologists other two localities. On the 20th and 21st of July this year, I found this little Butterfly in considerable abundance on a small hill called the Golden Hill, on the property of Berry Hill, in the parish of Abdie, Fifeshire. The hill is used as pasture-ground for cattle, and the Grass is very short; but there is also a considerable number of wild flowers, many of which were then in blossom. The other locality is in the neighbourhood of Anstruther, in the south of Fife, on the Frith of Forth, where it was taken this summer, but not in any abundance, by Mr. Henry Goodsir. They do not move with such rapidity as any of the other species of *Polyommatus* I have met with, and are therefore much more easily captured; but, like other species, they are almost constantly engaged in combat with each other, so that many of the specimens are very much worn. In Jardine's *Naturalist's Library*, Entomology, Vol. III., plate 34, fig. 4, it is figured with an orange-red band on the upper surface of both pair of wings; and in Wood's *Index Entomologicus*, plate 3, fig. 74, it is figured with red lunules only on the posterior wings. Among my specimens are examples of both of these, with this difference, that instead of having a red band, as represented in the *Naturalist's Library*, there are four or five orange-red lunules on the posterior margins of both pairs of wings. The orange-red lunules are stated in the *Naturalist's Library* to be very indistinct on the posterior wings. In some of my specimens there is a small white spot on the disk of the posterior wings on the upper side. In the figure in the *Naturalist's Library* the underside is represented with a continuous band of orange-red around the margins of all the wings; while in all my specimens it is distinctly separated into spots. In the figure also none of the white central spots on the under side have pupils, whereas in a few of my specimens some of these white spots have a black pupil. There has been considerable difference of opinion among entomologists as to whether *Polyommatus agestis*, *P. salmacis*, and *P. Artaxerxes* form three or only one species; but as I have never seen specimens either of *P. agestis* or *salmacis*, I will only make the two following quotations from observations on this subject, by Messrs. Newman and Dale, two distinguished entomologists, and then leave the reader to judge for himself, whether there are three or only one species. Mr. Newman, in the *Entomological Magazine*, Vol. II., p. 515, has the following

remarks :—"From examining specimens of *Polyommatus agestis*, from different localities, I have arrived at a conclusion which will not, I fear, be coincided with by many of our lepidopterists. On the Downs of Sussex and Kent, *agestis* assumes what may be called its typical form. I have taken it at Ramsgate, Dover, Hythe, Hastings, Rye, Brighton, Worthing, Little Hampton, Chichester, Portsmouth, Isle of Wight, Dorsetshire, Somersetshire; and throughout this range it is very similar: then going upwards I have met with it at Worcester, Birmingham, Shrewsbury, and there an evident change has taken place, the band of rust-coloured spots has become less bright; at Manchester these spots have left the upper wings almost entirely: at Castle Eden Dean they are scarcely to be traced, and a black spot in the centre of the upper wing becomes fringed with white, in some specimens it is quite white; the Butterfly then changes its name to *salmacis*. We proceed further northwards, and the pupil leaves the eyes on the under sides, until at Edinburgh they are quite gone: then it is called *Artaxerxes*. The conclusion I arrive at is this, that *agestis, salmacis*, and *Artaxerxes* are but one species." Mr. Dale, in *The Naturalist*, Vol. I., p. 16, says :—"I have observed a few (of *Artaxerxes*) having a slight black pupil to the ocelli on the reverse side; and one I took at Duddington Loch has it more distinct than some of those taken at Newcastle, where it assumes the name of *salmacis*; some resembling the former, and some differing but little from our southern species (*agestis*) or variety, and which have been supposed by some persons to be hybrids. From those who contend for three species, I would request opinions as to a specimen lately taken near Langport, by Edward Paul, Esq., being evidently *agestis* (a remarkably fine ♀), with a more complete white spot with a black pupil than any I have seen from Newcastle; and I have a specimen or two shewing a little white cincture to the black spot. Surely it would be going too far to make a fourth species, yet it is better than *salmacis*. I think this proves beyond a doubt that they are but one species; and I think this Langport variety an interesting capture. Mr. Bentley has a beautiful variety of *agestis*, totally destitute of black ocelli on reverse." The discovery of the caterpillars of each, which are at present unknown, will, I think, be the most certain way of settling the point. But whether *Artaxerxes* be considered a distinct species, or merely a variety of *P. agestis*, the following characters will be sufficient to distinguish it :—

Polyommatus Artaxerxes.

The wings generally expand about 14 lines, and on the upper surface are of a dark glossy brown colour, with a discoidal white spot on the disk of each of the anterior wings. All of the wings having posteriorly a row of five or six orange-red lunules. The colour of the underside is greyish brown, the anterior wings with a discoidal white spot, beyond which is a curved band of similar spots, which occasionally have black pupils, succeeded by a band of orange spots, bounded on both

sides by a black crescent; the posterior wings have a similar band of orange spots, generally three white spots towards the base, a large white spot near the centre, and a very irregular row behind the middle, with a broad white central patch connecting it with the orange band. Fringe of all the wings white, spotted at regular intervals with brown. Very variable in its markings, as may be seen above. Caterpillar unknown. The perfect insect appears in June and July, and we are informed, by Mr. Wm. Gardiner, that the best time for captures is in the morning, when they may be found resting on the culms of the Grasses.

Law Park Cottage, near St. Andrews,
October 15, 1838.

SOME ACCOUNT OF A VISIT TO THE BRITISH ASSOCIATION AT NEWCASTLE.

By a Member.

As many of the readers of *The Naturalist* may not have been present at the meeting of the Association, a few remarks on subjects that do not fall within the range of the ordinary reports of its proceedings may not be unacceptable. The month fixed for the meeting this year was better than that of preceding years, not only in adding to the pleasure of travelling, excursions, &c., but being more adapted to the convenience of members generally. Having secured a place by coach a week before-hand, I arrived with a party of the "wise men"—as the Newcastellians were pleased to yclep the members—early on the Sunday morning. Preparations had been made on every side, and the good people of Newcastle, supposing probably that, like the Magi of old, the "wise men" of the present generation were come from the East, with gold, and frankincense, and myrrh, as well as science, determined to have their share of the former as well as the latter. Accordingly, a most extravagant charge was made for lodgings, and even the hotel-keepers doubled the price of their accommodations. However, after some expostulation, and the general resistance of the members to such imposition, the people became more reasonable, and no instance occurred to my knowledge of any philosopher leaving the town from sheer necessity. Most extraordinary exertions had been made to receive the Association worthily: but surely the spirit that dictated so much for merely pleasure and amusement, is inimical to the real interests of the institution. It is not maintained that its interests have at present suffered; but if recreation and amusement are to form the great objects of attraction in joining the British Association, it needs no great foresight to prophecy

its downfall. That this anticipation was common amongst the scientific members, the writer is convinced, and Mr. BABBAGE, in expressing himself dissatisfied at the prodigal reception they had met with at Newcastle, spoke but the language of the most zealous members of the Association. Neither was Mr. BABBAGE alone when he maintained that the offices in the Association, especially the highest, ought not to be conferred on rank alone. Would it not be better for a scientific body to confer its honours on those who have peculiar claims to the esteem and respect of such Institutions? Scientific men have little or no consideration from the state in this country; they are not appreciated by the great bulk of their fellow-men; and where then can they expect to receive the honour that is due to them so appropriately as from their colleagues and fellow-labourers? Why pass over a DALTON, a BREWSTER, a HERSCHEL, a FARADAY, or a LINDLEY, to honour a man who never contributed an atom to the elucidation of the principles of science that these have established, or added to the stores of our knowledge by the discovery of an animalcule? Here, then, are the Scylla and Charybdis of the Association, and it behoves the members of the General Committee, who have the management of affairs, to guard against the imprudence of local Committees on the one hand, and the aristocratic tendencies of the Professors and admirers of our old Universities on the other. If this be done, the symptoms of weakness that have already presented themselves may yet be removed.

The town of Newcastle has been lately much improved by the building of some new streets and public edifices, the latter of which afforded accommodation for the meeting of several of the Sections; and perhaps at no previous meeting have they been better located. With the exception of the Medical and Zoological Sections, all were opened to the ladies; the Geological, however, was by far the most patronised by the fair sex. The proceedings of this latter section were very satisfactory, and some good papers were read. The accumulation of facts is evidently producing a good effect on the minds of geologists; for having now so many of these "stubborn things" to deal with, they are less inclined and have less time to speculate and dogmatise than formerly.

The Natural History section was better attended this year than last, probably owing to the influence of the Natural History Society of Newcastle, which has done much, not only for diffusing a knowledge of Natural History in its own town, but throughout the country. This section includes Zoology and Botany. Why these two branches of science should be put together may be a question with some; at any rate one fact is certain, both do not prosper. There were only three papers on botanical subjects, and the only botanists of eminence present were Drs. GRAHAM and GREVILLE. Are not the botanists of this country sufficiently numerous to support a section of their own? As it is at present, it

is too much to suppose that those who take an interest in Botany are prepared to sit and listen for hours to the technical details of icthyologists, entomologists, ornithologists, &c. I would not say this has kept away botanists from the Association, but their absence at the last meeting ought to suggest the propriety of forming a section exclusively devoted to Botany. The importance of this science, the eminence of its cultivators, and the acknowledged deficiency of our country in this department of knowledge, demand this at the hands of the British Association.

That Zoology can stand alone, was proved at the last meeting; and with the increasing disposition that exists for cultivating Comparative Anatomy, the papers at this section will probably prove increasingly numerous and important. That zoologists need the assistance of comparative anatomists is very evident from what took place at the last meeting, where a gentleman not unknown as a zoologist in this country contended that our systems of classification could not be improved by an increased knowledge of the internal structure of organic beings.

From some observations that were made at the Natural History Section, it was proposed to form an Agricultural Section. At first sight the multiplication of sections may appear an evil, but it has been found to answer in previous cases, and it is to be hoped that one of the new regulations of the Committee will be acted on, and that "the sections will be divided whenever the number or variety of the subjects appear to render such a course expedient." This, however, cannot be so effectual as the constitution of new sections. Mathematics and Physics were separated from Mechanics, and they have acted the better for it; the same might be hoped of Zoology and Botany; and if the cultivators of Political Economy can support a statistical section, there can be little doubt that we have scientific cultivators of the land who would do honour to an Agricultural Section.

One of the most interesting circumstances that took place at the Natural History Section was the presence of Professor Ehrenberg, at the Thursday's sitting. He exhibited to the meeting his great work on *Infusoria*, and gave in French a brief account of his inquiries in this obscure department of Nature. He is a short, thick-set man, with a large head, well developed in front, dark hair, and intelligent countenance. He was very communicative, but did not appear to comprehend the English language.

There was but little time to visit the objects of interest in the town and neighbourhood. However, I found time to visit the Museum, and certainly was much pleased and surprised at it, as also at Mr. Grainger's new buildings. There was an extensive collection of objects, which were arranged with remarkable order and skill, and quite free from the slovenly appearance that too often offends the eyes in museums. There is attached to it an excellent library,

containing most of the best works on Natural History. The Museum is very liberally thrown open to the working classes on certain evenings, and in this respect is an example to every similar institution in the kingdom.

At the Hall of the Society of Arts a room was set apart for the exhibition of models, specimens of art, and objects of Natural History. The models, &c., were very numerous, but of specimens of Natural History I saw none.

During the week a requisition was made to the Mayor, to call a public meeting for the purpose of taking into consideration the propriety of forming Horticultural and Zoological Gardens. There are none at present at Newcastle, but there is no doubt that they will quickly have some; and from the good sense and taste displayed by the inhabitants in so many of their public institutions, they will probably be formed and conducted on a plan worthy of the town.

On Friday some of the Sections made a holiday. One party went to the opening of a new railway bridge over the Wear, and narrowly escaped being precipitated over the parapet, a distance, it is said, of 157 feet.—Another party made an excursion to Tynemouth, and from thence along the coast to Cullercoats. It consisted chiefly of geologists, and their day's pleasure was much enhanced by the efforts of Professor SEDGWICK, who during their walk occasionally took his station on a projecting rock, and discoursed, in his happy manner, on the nature of the strata and other objects of geological interest, with which they were surrounded.

On Saturday the business closed, and the General Committee met for the purpose of making grants of money for scientific purposes, &c. The following sums were voted:—Mathematics and Physics, £2,263; Mechanics, £598; Geology, £325; Statistics, £300; Chemistry, £150; Medicine, £100; Zoology and Botany, £6. Total, £3,742. Nobody can but be surprised at the smallness of the grant in the latter compared with the former sections. Physical science is unquestionably important to the commercial interests of our nation; but are there not inquiries connected with the sciences of Chemistry, Anatomy, Zoology and Botany, just as important? The fact is, these latter sciences are not pets in our old Universities, and the affairs of the Association seem chiefly to be directed by Professors residing in these places, or by aristocrats educated there. An instance of the disposition there is to suppress the recommendations of these latter Sections occurred at the late meeting. The Chemical and Medical Section made a request for £200 to bring over from America ALEXIS ST. MARTIN, whose name is well known to physiologists in this country, as the subject of the experiments on digestion by Dr. BEAUMONT. This was refused. The Marquis of NORTHAMPTON is reported to have objected to the grant, because, forsooth, the object was "disgusting"! Undoubtedly many of the subjects investigated by anatomists and physiologists would be disgusting to gentlemen of fortune, educated at

Cambridge and Oxford; but is this a reason why the British Association should refuse the reasonable request of two of its Sections?

The Natural History Section receives a grant of £6! Whether this minimum grant is to be attributed to the backwardness of the General Committee, the indolence of the Sectional Committee, the impossibility of advancing Natural History by so unscientific a thing as money, a want of general interest in the science, or what else, it is difficult to say—the readers of *The Naturalist* must guess. There was, however, one grant made to the Mathematical Section from which, it is to be hoped, all Sections will receive benefit. I allude to the £100 that was voted for the "translation and circulation of foreign scientific memoirs."

Several of the members staid till the Monday, for the purpose of attending the annual dinner of the Natural History Society. In the morning a small party was formed for a botanical excursion to the coast between Sunderland and Shields. This was not the region, however, for any rarities; and, except an excellent appetite for the Natural History dinner, it did not appear that the party brought back any thing very remarkable. The following plants, however, were obtained, which were new to some of the party:—*Campanula hybrida*, *Atriplex rosea*, *Siene noctiflora*, *Galium tricorne*, and some plants common to the sea shore.

The next meeting will take place at Birmingham.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part XVIII.

By Neville Wood, Esq.

Resuming our analysis where we left off last time, we find the—

Martin Swallow, *Hirundo urbica*,—Hirondelle de-fenêtre, *Fr.*—Rondine commune, *It.*—Haus Schwalbe, *G.*—The plate is a very pretty one. It represents a pair of these birds, the female sitting in the nest, her loving mate perched on the ledge of the beautiful though mud-built structure. This bird—too familiar and too justly cherished by our countrymen to need a minute description—migrates in spring, from warmer latitudes, to countries far north of Europe.

Chimney Swallow, *Hirundo rustica*,—Hirondelle de-cheminée, *Fr.*—Rondine domestica, *It.*—Rauch Schwalbe, *G.*—This species is obviously more fitted for displaying the powers of the artist than the last; but at the same time it is perhaps a more difficult subject; and although the plate before us—representing an adult and a young bird—is very far from being a failure, it pleases our critical taste less than the preceding. Inhabits the whole of Europe in summer, passing

southward in winter, and proceeding to Africa. At least we shall remain satisfied with this view of the case until it can be proved that our lakes and rivers become stocked with Swallows in winter; and that while, on the one hand, human beings of both sexes and of all ages are gliding over the ice above, Pike and other fish dwelling in the regions below, and commonly considered voracious and destructive, are now too intensely frozen to offer any disturbance to their feathered amphibious companions! Perhaps the older naturalists went yet further, and conceived that this general immersion of animals so delicate as Swallows during the most rigorous season of the year, was a "wise dispensation of Providence"—an admirable contrivance for the mutual warmth and comfort of the finny and feathered tribes!!—However, so untenable an idea has long since been satisfactorily refuted, and the very existence of the notion at any time is considered a disgrace to the annals of philosophy. Had the matter not been discussed and settled long ago, it would be unphilosophic in any one to turn the matter into ridicule; but when all facts and theories tend to prove the impossibility of the old notion, and the truth of that which now prevails—when, moreover, we still find here and there an individual so ignorant or so obstinate that he *cannot* or *will not* see the clearest things in their proper light—or in any *light* at all—then we find the pleasantry rising irresistibly from our "organ of Wit." But to proceed.

Fern Nightjar, *Vociferator Europæus*,—Engoulevent ordinaire, *Fr.*—Tag-schlafer (*i. e.*, day-sleeper), *G.*—A male is beautifully figured of the natural size. Inhabits Europe in summer, passing southward beyond the Mediterranean in autumn. It eats Moths, Cockchafers, and other nocturnal insects, and does not purloin Goat's milk, as imagined of old!—The habits of this bird are extremely interesting, and might fill a volume, but we conclude that the *leading incidents of its life* are sufficiently well-known to the readers of *The Naturalist;* and as we wish in general to lay most stress upon species *not* British, we shall now pass on, leaving our good "Goatsucker" in the enjoyment of his evening meal.

Tengmalm's Owl, *Noctua Tengmalmi*,—Chouette Tengmalm, *Fr.*—Rauch-fussiger Kauz, *G.*—An excellent figure of an adult male, living size, and altogether a *fac-simile*. Occurs in France and Germany, is more abundant in Scandinavia, and probably extends throughout the Arctic Circle; it has been met with two or three times in Britain. In the night it repeats a melancholy note at long intervals, and it is quite defenceless in the day-time, whenever it is unfortunate enough to wander out of bed during a dream or an absent fit. Whether this propensity to wandering forth in the day-light proceeds from *monomania*, or whether some individual "birds of Athens" are regular "night-walkers," is a point that will require further consideration. "It is said to build

a nest of Grass, in holes or clefts about half way up a Pine-tree, and to lay two eggs, in the month of May." The sexes do not differ.

Common Tern, *Sterna hirundo*,—Hirondelle-de-mer pierre-garrin, *Fr.*—Roth-fussiger Meerschwalbe, *G.*—The plate contains two adults, one in winter the other in summer plumage, and is above all praise. Extends from the Arctic Circle to the Mediterranean, and even to Africa and India, and is, like the rest of the tribe, migratory on our shores. It frequents rivers and creeks as well as the sea-shore, feeding on fish, &c. Makes no nest, but scrapes a hollow in the sand beyond high-water mark, laying two or three eggs, varying from olive-green to cream-colour, blotched with black and grey. In warm weather the eggs are, during the day, said to be left to the influence of the sun; but as the young are assiduously attended by their parents, this proves no want of Philoprogenitiveness in the species.

Marmora's Fauvet, *Ficedula sarda*,—Becfin sarde, *Fr.*—A pair of these birds are beautifully delineated. It is nearly allied to *Ficedula melanocephala*, from which, however, it is distinguished by its more feeble and slender beak, &c. Inhabits the eastern portions of the European continent, but it is a rare and local bird. Dwells in small woods, subsisting on "insects, which attach themselves to the leaves." Nidification unknown. The female has the under parts lighter than the male.

Short-eared Madge, *Otus brachyotus*,—Hybou brachyote, *Fr.*—Kurzöhrige Ohreule, *G.*—The plate contains an exceeding fine figure of an adult male, natural dimensions. It is probable that this bird "may be observed over the whole of the four continents; with the exception of the northern regions." In the greater part of Europe—including Britain—it is well known as a migratory bird.

Cetti Reedling, *Salicaria cetti*,—Becfin bouscarle, *Fr.*—Two adults are well figured. Inhabits the southern and eastern portions of Europe, and the North of Africa. Temminck mentions its having been killed several times in England, but we have no doubt this is a mistake. It is common in Sicily and Tuscany, where it breeds, forming its nest of the stalks of Grasses; the eggs are reddish-brown. The sexes do not differ. Mr. Gould places this species provisionally in the genus *Salicaria*; but its obvious relationship to the Wrens (*Troglodytes*) convinces us that it will not long retain its present position.

Rough-legged Buzzard, *Buteo lagopus*,—Buse pattue, *Fr.*—Rauhfussiger Busard, *G.*—An unexceptionable representation of an adult male, two-thirds of the natural size. Dispersed over the whole of the Arctic Circle, but its residence is probably not permanent in North America. It is migratory with us, and its abundance varies in different seasons. It feeds on Wild Ducks, Rabbits, Moles,

Lizards, &c. &c. Its flight is low and smooth, and seldom long-continued. It seizes its prey on the ground. The nest is found in lofty trees, and its four white eggs are spotted with brown. The sexes are similar, but the young birds undergo many changes of plumage.

Western Pochard, *Fuligula dispar*, Steph.—A beautiful figure, natural size. One specimen has been killed in England (in Norfolk), and one on the continent (in Denmark), and these are the only two instances of its occurrence in Europe. It inhabits Northern Asia, Siberia, Kamtschatka, and the north-western coasts of America. It breeds on precipitous rocks, and flies in considerable numbers. Our author follows Mr. Selby in ranking this species as a *Fuligula*, but at the same time thinks that it more properly belongs to *Somateria*. Neither Mr. Gould nor Mr. Selby have seen a specimen of this bird—no more have we, and we shall, therefore, not venture an opinion touching the affinities of the species, content to leave it for the present as the Western *Pochard*.

Whin Linnet, *Linaria cannabina*, Grosbec linotte, *Fr.*—Montanello maggiore, *It.*—Blut Hanfling, *G.*—A male and female are figured perched upon a Furze-branch: the former is truly lovely. Dispersed over the whole of Europe. The changes of plumage which it undergoes are now well understood by ornithologists.

Carrion Crow, *Corvus corone*,—Corneille noire, *Fr.*—Corvo maggiore, *It.*—Krahen Rabe, *G.*—We think this figure—of the natural size—could hardly be surpassed: indeed we should be fully satisfied with its equal. Common and indigenous with us, and dispersed equally in the western portion of the European continent. There are no changes of plumage to be noted, and we will not run the risk of offending his reverence or our readers by giving any account of his economy, either public or private.

Moustache Tern, *Sterna leucopareïa*,—Hirondelle-de-mer moustac, *Fr.*—The plate represents a male, of the natural size, in *full dress*—not for the drawing-room, but ready to wing its airy course o'er the "wild unbounded sea." Whether or not the figure is characteristic, is, in this instance, more than we can say, not having seen the bird. It has been met with on the marshes of Hungary and the coast of Dalmatia; it appears to prefer extensive inland marshes to the ocean, and is in Europe almost confined to the eastern portions. Feeds on winged insects, Snails, Worms, &c. Young birds are known by their reddish-brown heads, and in winter the same part—at other times black—becomes white in adults.

Moustached Reedling, *Salicaria melanopogon*,—Becfin à-moustaches-noires, *Fr.*—An adult male is prettily represented, on the wing. Abounds in the marshes of the Roman States, among *Arundo speciosa*. "It is always in the marshes, clinging to the Rushes and uttering a very loud cry; it descends to the

surface of the water and walks upon the aquatic plants." Feeds on small Coleopterous insects. Its nidification has not been ascertained, but in its general habits it appears to resemble our British Reedlings.

On the same plate is figured, of the natural size, the—

Aquatic Reedling, *Salicaria aquatica*,—Becfin aquatique, *Fr.*—Binsen Sanger, *G.*—Inhabits Italy and the east of Europe, occasionally visiting France and Germany, and, very rarely, Holland. "The nest is artfully constructed among the stems of aquatic plants, and the eggs are four or five in number, of a yellowish ash-colour, marked with very fine spots of greyish olive." The sexes, as in the preceding species, are similar. This bird is somewhat less sombre in its plumage than the British specimens of the genus. How far its habits justify its being called, *par excellence*, "*aquatica*," we have yet to learn.

Common Bittern, *Botaurus stellaris*,—Heron grandbutor, *Fr.*—Sgarza stellare, *It.*—Grosse Rhordrommel, *G.*—The figure represents a male, two-thirds of the natural dimensions. It might, we think, have been further diminished with advantage—otherwise we have no desire or reason to complain of the plate. Inhabits Europe, and also occurs in Asia and Africa. In England, where it once abounded, the extensive drainage and cultivation of waste and marshy tracts have now in a great measure banished it from the country, especially as it is a shy bird, desiring to hide itself amongst herbage during the day-time. Feeds on Mammalia, fishes, reptiles, insects, &c., which it procures in the dusk of morning and evening. The nest consists of sticks, Reeds, &c., placed among dense herbage near the water's edge. The young, says Mr. Gould, are hatched in twenty-five days, and are fed by the parents in the nest until capable of providing for their own wants. During the pairing season (February or March), observes Mr. Selby, the Bittern utters its well-known booming sound, whilst rising in the air, in a spiral direction, to a very great height. When attacked by a Dog, adds the same estimable author, it throws itself on its back, defending itself vigorously and successfully with its bill and claws (*alias* "tooth and nail"), as we have frequently observed the Barn Owl, Merlin Falcon, and other birds do in a similar predicament. The sexes do not differ—at least not in plumage, for we would not venture to answer for the absence of all private "differences."

Greylag Goose, *Anser ferus*,—Oie cendrée, *Fr.*—Oca paglietane, *It.*—Gemeine Gans, *G.*—An adult male is finely figured by Lear, two-thirds of the natural size. Inhabits the extensive districts of the temperate portions of Europe. "Southwards it extends to the northern portions of Africa, eastwardly to Persia, and is generally dispersed over Asia-Minor." Lives in flocks, feeding on young Corn, Trefoil, Grasses, grain, &c. Builds its nest among Rushes; the eggs, from six to twelve in number, are of a "sullied white." The sexes differ but little.

Thrush Nightingale, *Philomela turdoides*, Blyth,—Becfin philomèle, *Fr.*—

Grosse Grasmüke, *G.*—The figure is of the natural size, and exceedingly beautiful. "In adopting Mr. Blyth's specific term for this bird" Mr. Gould says he has been "influenced by the desire of paying a just compliment to a young and ardent naturalist, who has taken much pains in elucidating the habits of this as well as of many other groups in Ornithology." Inhabits Silesia, Bohemia, Pomerania, Franconia, and other parts of Germany. "It is said to be more abundant than the common species in Hungary, Austria, and Poland; more rare in France, and never seen in Holland. It is generally found in woods situated on the tops of hills, and also in plains, particularly those in the neighbourhood of running streams." Feeds on Worms, insects, berries, &c. The nest is built in thickets, or in damp situations; the eggs are olive-brown, stained with a deeper colour. The sexes agree in plumage. Its song is louder and harsher than that of our own species.

Purre Tringa, *Tringa variabilis*,—Bécasseau variable, *Fr.*—Veränderliche Strandlaufer, *G.*—Two adults, one in summer the other in winter plumage, are well represented, of the natural size. Common in Europe, and a winter visitant with us. At the approach of the breeding season it quits the sea-shore, and repairs to lonely heaths and marshes. The nest is a mere depression in the ground, lined with a little Grass; the eggs are four in number, greenish grey, spotted with red. Feeds on Worms, insects, and small molluscs. The changes which the Purre Tringa undergoes have proved a source of no small perplexity to naturalists; but for a more detailed account of the species we must refer our readers to Mr. Gould's description, or to Selby's admirable work on British birds.

Grey Flycatcher, *Muscicapa grisola*,—Gobemouche gris, *Fr.*—Geeleckter Fliegenfanger, *G.*—A male is given, of the living size; but we regret that we cannot bestow our usual commendation on the plate. We think, moreover, that the bird can hardly be so scarce in Middlesex as to render it impossible to have supplied more than one figure. Young birds differ considerably in appearance from adults—being more spotted—and a *youngling* would have improved the effect of the plate. The Grey Flycatcher has an extensive range over the European continent, being dispersed from the border of the Arctic Circle to its most southern boundary, and Mr. Gould has met with it in collections from India. It is common with us.

Caspian Tern, *Sterna Caspia*,—Hirondelle-de-mer Tschegrava, *Fr.*—Sterna maggiore, *It.*—Caspische Meerschwalbe, *G.*—A male in summer attire, natural size, is represented. The plumage is executed with great delicacy. The Caspian Tern is dispersed over the northern shores of Africa, the eastern portion of Asia, and the temperate districts of Europe, where it prefers inland seas to the wide

ocean. In Britain it rarely occurs. It is the largest of the genus, exceeding many of the Gulls in size. Feeds on fish, mollusca, crustacea, &c. The eggs, four in number, are laid in a hollow scraped on the sea-shore. Breeds on the shores of the Black Sea, the Baltic, &c. The young are transversely barred with brown; in adults the crown of the head, white in winter, becomes black in summer, and one description will suffice for the plumage of both sexes.

Here, then, endeth our analysis of Part XVIII. of this splendid and valuable work.

Campsall Hall, Oct. 26, 1838.

REMARKS ON THE GENERAL STRUCTURE AND HABITS OF INVERTEBRATE ANIMALS.*

By Edwin Lankester, M.R.C.S.

(Concluded from Vol. III., p. 410.)

The classes of animals which have been previously noticed, will be found to be Cycloneurose and Cyclogangliate sub-kingdoms. I shall now commence with those classes found in the Dyploneurose group, where the nervous system is arranged in a double line along the fore part of the animal.

Many of your readers have probably, in passing a venerable Oak, or a spreading Elm, observed that their bark is covered with a greenish scaly substance, which s one of the lower tribes of plants, a Lichen. Many other kinds of plants fix themselves to the trunks of trees in this manner; some of them, as the *Boleti* and the Mistletoe, deriving all their nourishment from the plant on which they grow. Now precisely the same thing occurs in the animal kingdom, for as we have plants living on living plants, so we have animals living on living animals; and the next group of animals which falls to our consideration is one of this kind. They are called *Entozoa*, and vary exceedingly in their size, shape, and form. No animal is free from these invaders; the higher we ascend in the scale of organisation, the more abundant do these pests become; and Man is more obnoxious to them than any other creature. They are, however, generally concealed, either by their size or situation, from the eye, and justify the language of the poet—

* Being the substance of a lecture delivered at the Doncaster Lyceum, Oct. 15, 1838, Mr. J. B. Testa in the chair.

"These concealed
By the kind art of fav'ring Heaven, escape
The grosser eye of Man; for if the world
In worlds enclosed, should on his senses burst,
From cates ambrosial, and the nectar'd bowl
He would abhorrent turn, and in dead night
When silence sleeps o'er all, be stunn'd with noise."

THOMSON.

But as the detail of the structure and habits of these animals might alarm some readers, I shall merely add, in the words of a writer on this subject, that "more than twenty of these pestiferous creatures that attack Man have been enumerated; some penetrate into the very seat of thought; others disturb his bile; others circulate with the blood in his veins; others, again, are seated in his muscles; others in his stomach; the Guinea-worm in his cellular tissue; some attack one part, some another; some even attack infants, and them only. Such are the 'ills that flesh is heir to.'"

The next group of the lower animals is the one which includes the Common Earth-worm and the Leech. The structure of these, which are called Annelidans, is very curious and interesting, not failing to offer as many proofs of creative wisdom and goodness as those which receive more attention from the general observer. The Leech is well known for its important services as a phlebotomist. The instruments which it uses in this capacity are three serrated teeth, which it very adroitly projects into the flesh, and afterwards applies to the wound a sucker, by means of which it is enabled to withdraw, from the part it wounds, a large quantity of blood. They are found numerously in our pools and ditches, and subsist there by preying upon the animalcules and other animals that live in those places. There are two kinds found in this country, the Horse Leech and the Medicinal Leech. To be able to distinguish between these is a point sometimes of great utility, as the former is by no means so adroit and clever a surgeon as the latter, and frequently his awkward surgery is attended by unpleasant effects. The Horse Leech is much longer, and has a greener, brighter, and more varied colour than the Medicinal Leech. It also inhabits stagnant waters, whilst the other is found in brooks and running streams. Although the Leech occurs very plentifully in many parts of this island, yet such is the quantity used in this country, that many thousands are actually imported from the continent.

If we examine the structure of the Leech, we shall find that externally it is composed of a series of rings, which are in fact, its skeleton, giving attachment to its muscles, and support and defence to its organs. It is here, then, the rudiments of that skeleton commence, which we find completed in the higher forms of animals, as the Crabs and insects.

The Earth-worm has an external structure similar to that of the Leech; it is externally composed of segments, which permit the animal to make those contortions we so often observe; but it has, added to each of these segments, a little organ which can be regarded in no other light than the element or commencing existence of a leg. On each of the segments the Earthworm has four pair of these little legs, two pair on each side; and they are supplied with a delicate muscular apparatus, by which the animal is enabled to use them as organs of motion.

Amongst the Annelidans are many that inhabit the sea. One of these, the *Serpula*, or Wormshell, inhabits a shell. Another called *Sabella*, buries itself in the sand, and there throwing out a viscid secretion from its skin, a hard covering is formed for it by the glued sand. In some districts these animals are the means of throwing-up in this manner sand-banks of considerable size. They first bury themselves in the sand, with the exception of their heads, which remain out for the purpose of securing their prey. In the course of a little time the sea, as the tide rises, will wash the sand and shingle over them; the animal then elevates itself in its case, till its head is above the fresh deposited sand. As their cases are firm, they give enough strength to the sand to enable it to resist the effect of the retiring tide. When the tide again comes up, it deposits more sand, which the *Sabellæ* still rise above and consolidate; and in this way considerable elevations of sand are produced.

As we proceed higher in the scale of animal life, we find every part becoming more complicated. In the anatomy of the animals we have been so rapidly glancing at, we shall find this fully confirmed. But still we meet with no new function performed—no higher ends attained by the more complex than by the more simple forms of animal life. We found the little animalcules exercising all the functions of organic and animal life; and now that we have gone through more than half the classes into which animated beings are divided, we still find the same functions performed, but with more complicated apparatus.

Had it been the object of this paper, it would perhaps not have been uninteresting to have pointed out the gradual development of organs that takes place in the animal kingdom, in order to show how beautifully gradual are the steps by which the Creator has proceeded to form that masterpiece of the animal creation, Man.

From the observations previously made, this gradual development will hardly be traced, but still the general form and habits of the creatures mentioned will have probably suggested the idea. In the class or classes of animals we are now about to enter upon, it will be noticed that the skeleton or the organ of support is more highly developed than in any of the preceding classes. In fact it cannot but have been seen, in passing up from the animalcules and Jelly-fish,

through the Coral, the Star-fish, and the various kinds of animals that inhabit shells, that this part has been gradually becoming more complicated.

The next class (Crustacea) we arrive at is that to which Shrimps, Prawns, Crabs, and Lobsters belong, a very numerous, extensive, and useful class of animals, abounding in our ditches, ponds, rivers, seas and oceans. This class is well known on account of those individuals belonging to it which are edible; but the most numerous part of them are not generally known. The size of these creatures varies exceedingly, some being visible only with the microscope, whilst others, as the Lobster and Crab, attain occasionally a very great size. They are all invested, as it were, in a coat of mail, and some are armed with very formidable weapons, both for offensive and defensive warfare. However, this does not prevent them from becoming the food of almost every animal that approaches; even the Star-fish and Sea-anemone make them their prey; whilst the Cuttle-fish, soft and helpless as it appears, unscrupulously attacks the largest of the tribe.

Of the smaller kinds, there is one called *Monoculus conchacea;* this little creature is not invisible to the naked eye, but its parts can only be seen by the microscope. They are found very numerously in our ponds and ditches, often in so large numbers as to alter the colour of the medium in which they exist. Their colour is naturally brown or reddish, and when they collect together, they give the appearance of a yellow cloud in the water.

The larger and higher kinds are all furnished with large claws or legs, two of which are generally bigger than the rest; and, having two of the joints opposed to each other, they form very powerful organs of prehension. For these animals this organ is much more useful than a hand could be, as it enables them to take the firmest possible hold, insomuch that they frequently have these limbs torn from the body by the objects they grasp. This leads me to observe another peculiarity of these animals; it is the facility with which their limbs grow again. You may remove all their legs, one or two at a time, and in the course of a month or six weeks they will be found to possess new ones, as big and as useful as those they had lost.

The best-known forms amongst them are probably the Lobster and the Crab, and no one can look at these animals without being struck with the miraculous hinge-work of which they are composed. Look at the Lobster: it has long, jointed antennæ, probably acting as organs of feeling; a little lower down we find it supplied with palpi, and powerful maxillæ; then come its powerful pincers, by which it lays hold of its prey, and secures by its powerful gripe; following these we find five pair of legs serving for the purposes of locomotion; its whole body may be divided into segments, the upper rings of which have grown together, but the lower still move on each other; and they are so constructed, that when they contract they propel the animal backwards, and this is done with

the rapidity of lightning; Nature having apparently given it this power of motion in order to make up for its otherwise contracted movements. The possession of power in the tail is not confined to the Lobster. Shrimps and Prawns are indebted for their activity to the construction of this part of their skeleton; and the little Sand-hoppers, which are so common under the weeds at the sea-shore, make use of this organ to enable them to escape from any intruders.

A little animal of this tribe, called the Sea-louse (*Limnoria terebrans*) is but too well known for the attacks it makes on vessels, boats, bridges, or, in fact, any kind of wood remaining in still salt-water. It appears to feed upon the wood, and nothing can prevent its attacks. Where wood is in still salt-water, there will it be found. Some of the most valuable piers in this kingdom have sustained immense injury from this little animal. The wood of the new pier at Southampton is quickly going to destruction from the attacks of this little intruder.

Another curious family of these creatures is formed by the Hermit-crabs (*Pagurus*). It is seldom that we find members of the animal kingdom availing themselves to any extent of the labour of others, without rendering something in return, even in members of the same tribe or family; but in the Hermit-crab we have a remarkable instance of an animal taking up its abode in the habitation of an animal quite different from itself. These Crabs have a very soft body, apparently little adapted to resist the rude knocks they must meet with in the restless element they dwell in; they seem aware of this, and instinct directs them to take up their residence in the first unoccupied shell they meet with. It is most commonly that of the Whelk; but it is found inhabiting many others. Some of these animals are aquatic, others terrestrial. They abound in the Indian isles, and their shores are covered with them. "When the heat is most intense," says Mr. KIRBY, "they seek the shelter of the shingles, and when the freshness of the evening breathes, they run about by thousands, rolling along their shells in the most grotesque manner, jostling each other, stumbling, and producing a noise by the shock of their encounters, which announces their approach before they appear."

Another interesting member of this group of animals is the Land Crab. These animals are natives of the mountainous districts of the West Indies and South America. At certain seasons of the year they descend to the sea-side, to deposit their young. In doing this they go in such enormous numbers, that the woods and roads are covered with them. Like an army, they march in a regular line, without breaking their ranks, taking every thing in their way. Nothing stops them, scaling houses, over-running gardens, and surmounting every obstacle. Having arrived at the sea-side, they execute the purpose for which they come, and return again to the mountains, in the same orderly manner.*

* See *Naturalist*, Vol. III., p. 49.—ED.

Before leaving this class of animals, I would refer to their habit of casting their shells. Looking at these animals bound up in their skeleton-skins, like coats of mail, and destined to live for many years, one would suppose they must possess an especial means of growth in order to render their parts adapted to each other. This is effected by the animal shedding every year its old skin, which it does at a period when a new soft matter has been deposited inside, which is in readiness to become hard, and takes the place of the old skin. At this time it makes some very violent efforts, by means of which the old skeleton in every part of the body is fractured and got rid of. After this exertion, the animal becomes exhausted, retires, perhaps for a day or two, to some quiet nook, during which time its new skin becomes hard, and then it resumes its former habits with increased dimensions.

The next class of animals in the Invertebrate series is that of the insects; and were double the time to be devoted to their consideration that has been given to all the other classes, it would not be more than their interesting forms, functions, and instincts entitle them to. Who is there that has not formed an affection for, or at least taken an interest in, the insect world? From the gay plumes of the beauteous Butterfly that mocked our childish efforts to make it our prisoner, down to the common House Fly, whose extraordinary power of walking up window-panes and crawling over ceilings excited our youthful wonder, they are objects of pleasing association. From the Locust, whose myriads spread desolation over the earth,* to the little *Acarus* that takes possession of our flesh, and produces a painful disease, they are objects of fear and aversion.

They are the most numerous and most universally-diffused of animated beings. Of all classes of the animal kingdom their forms are the most diversified, their colours are the most brilliant, and their habits the most varied. Thus constituted, it is not wonderful that they should have always excited the attention of the observer of Nature; and extensive as this class is, we are perhaps better acquainted with it than with any of the preceding.

Amongst the many forms of animals that are called insects, there are two which have been separated from them by naturalists, and which form classes of their own. Insects have but six legs, but these have more than six. The first of these is a class to which the animals called Hundred-legs, or Centipedes, and Millipedes belong. They are very numerous, and there are few persons who have not observed them in some situation or another. Some have the power of rolling themselves up into a ball when touched or alarmed; and this arises from the segmented nature of their external covering. The same power of rolling up, though not so completely, is possessed in some measure by Worms and Lobsters.

* See *Naturalist*, Vol. III., p. 327.—Ed.

Another kind of these Hundred-legs, as they are called, viz., *Scolopendra*, is phosphorescent, and is frequently seen shining in the road, as brilliantly as the Glow-worm. The other class which frequently goes by the name of an insect-tribe, are the Spiders, *Arachnidæ*. They have, however, eight legs and no wings. These are very curious and interesting animals, and, although so commonly despised, they offer the most beautiful examples we have of the perfection with which the Creator has fitted for their station the simplest of His creatures. Neglected, persecuted, and despised as these creatures have been by the great mass of mankind, they have not been so by naturalists. Some of the most important contributions made to the science of Comparative Anatomy have been by naturalists who have studied the structure and habits of this class of animals. There are many animals in this class not strictly speaking Spiders, but those which are Spiders are divided into four kinds: the Hunters, the Vagrants, the Sedentaries, and the Swimmers. In each of these groups we find both in structure and habit something interesting. The Hunters build very neat little houses, which they line with a silk that might vie in softness and delicacy of texture with the most admired of those formed by the caterpillar of the Silk-worm. These seize their prey at a distance from their homes, which, however, they often convert into store-houses for the reception of superfluous game. The Vagrants generally conceal themselves in a little compact nest which they build, and here they watch their unwary prey, which either tumbles by accident into their nest, or, when it is near enough, they run out and seize upon it. Thomson draws a very accurate picture of these predatory creatures:—

"To heedless flies the window proves
A constant death, where gloomily retired
The villain Spider lives, cunning and fierce,
Mixture abhorred! Amid a mangled heap
Of carcases, in eager watch he sits,
O'erlooking all his waving snares around.
Near the dire cell, the dreadless wanderer oft
Passes, as oft the ruffian shews his front;
The prey at last ensnar'd, he dreadful darts
With rapid glide along the leaning line;
And fixing in the wretch his cruel fangs,
Strikes backwards grimly pleased; the fluttering wing,
And shriller sound, declare extreme distress,
And ask the helping hospitable hand."

The Sedentaries are poachers, not sportsmen, in their pursuit of game. They spread their nets in places likely to be the resort of luckless Flies, Ants, and other insects, concealing themselves carefully somewhere near the spot, till they see some victim struggling in their cruel meshes, when they rush out and quickly convey their prisoner from the place of his capture to their secret den, where they may feast

upon his carcase. The structure of these game-nets is very beautiful. They are mathematically exact in their proportions; and so well does the Spider know their construction, that it can walk over every part with the greatest ease, whilst the smallest insect in attempting the same is inextricably caught.

The Swimmers are adapted for plunder in the deep; they are the pirates of the insect tribe. They are so constructed that they can walk upon the surface of the water, and there are probably few persons who have not observed them pursuing their prey over the smooth surface of a pond or lake, on a calm summer's evening. But some spread their nets at the bottoms of ponds and lakes, in the middle of which they reside, in a little cocoon. Now as these animals are naturally air-breathers, one would wonder how they could live in water. But this is provided for by the little animal being enabled to carry down with it a supply of air; this it does a little at a time, till it has accumulated sufficient to last it for a day or two, when it retires to its habitation to watch for its prey. The water Spider was, then, actually making use of the principle on which the diving-bell is constructed, ages before Man had thought of employing this instrument.

Among the other animals that occupy the tribe of Arachnidans, we find the singular family of Scorpions; also that very prolific family of little animals known by the name of Mites. The last are found in almost every possible situation, and are the pests of other living animals. Several in foreign countries inflict very severe wounds, often attended by fatal consequences; whilst in our own country a very disagreeable and common cutaneous disease is the result of their attacks.

The true insect tribe next claims our attention; but their forms and habits are so numerous that selection becomes a difficulty, and the more so as the object of these remarks is merely to point out how much there is interesting and deserving notice in every department of the animal kingdom. But before enumerating the orders into which this class is divided we will just glance at the general structure and economy of insects. They are characterised by having six legs, a head distinct from their body, possessing two antennæ or horns, in every part of their bodies, they are supplied with little pores leading to tracheæ, which are the means by which they breathe. They are all produced from eggs.

One of the most remarkable points with regard to insects is the metamorphosis that many of them undergo in the process of their growth. The egg state is the first in which we observe them. These eggs are deposited by the parent with the most scrupulous attention to the wants of the young offspring directly they are hatched; and thus it is that we find them in all situations. The common White Butterfly deposits her eggs on the Cabbage-leaf, which is the food best adapted to her young, as the gardener too often wofully experiences. Not only

does it lay its eggs on the Cabbage-leaf, but it deposits them on its under side, and thus they are protected from being swept away by the rain or injured by too much exposure. Some deposit their eggs on the leaves of the Oak, others on the Poplar. Many of the Gnat tribe deposit them in water—all in the precise situations in which their young will be best supplied with food when born. The solitary Wasps and Bees build little nests for their eggs, which they fill up with food necessary for the sustenance of their young when hatched.

When the caterpillar is hatched, it is generally small and feeble; but it grows very rapidly, and is generally a most voracious creature. All those who have observed their effects in gardens and hedges, can bear testimony to this fact. This large quantity of food seems to be necessary for perfecting and elaborating that creature of which they are so faint a resemblance. During its existence the caterpillar casts its skin several times, in order to have it adapted to the peculiarities of its form within. After leading for some time a life of sensuality, seeming to have no other object in existence but that of eating, the caterpillar suddenly becomes uneasy, weaves or forms for itself a sort of coffin, in which it lies quiet for many months, mostly during a whole winter, and sometimes for two; at the end of this time it bursts asunder the bonds that entomb it, and comes from thence a being exhibiting all the perfections with which the Creator has endowed it for fulfilling the position it occupies in the universe. Nothing can be more striking than this change in the Butterflies. Look at that greedy, crawling, almost disgusting object that is so voraciously devouring the coarsest vegetables in our gardens. Observe it once more as it unfolds its elegant wings on the balmy air of a summer's day, sailing gracefully along, and only occasionally stopping to sip the delicious nectar prepared by the most brilliant portion of the offspring of Flora! How different its state of existence!

The perfect insect is generally weak, and its parts are soft, when it first emerges from the pupa state; but by exposure to the sun and air they soon acquire strength and vigour to enter upon their new state of existence. These changes are more or less perfectly undergone by almost all insects.

The classification of insects is exceedingly diversified, according to the views of different naturalists. That proposed by Linnæus is now supplanted; but as it is the most simple, it will be best adapted for our present purpose. There are seven orders, the first of which is called *Coleoptera*, or the Sheath-winged, or Beetle tribe, which comprises all the insects having a hard horny case covering their wings, as in the Common Cockchafer, &c. These are perhaps among the most useful of the insect tribes. The Creator seems to have appointed them to act as the scavengers of the earth, for wherever animal or vegetable matter is found in a decaying state, they are present in abundance. They possess amongst them also some of the largest of the insect tribe, if we take the bulk of the body as

the standard of magnitude. The variety of their forms is likewise very great, and in no part of Nature is the exquisite chiselling of the Great Architect more apparent than in many of these beautiful insects. This order is well known, as they are so universally diffused. Amongst the most interesting is the Glow-worm, which lights up its little lamp, to "beautify and cheer the night." On what this property depends, the investigation of the learned have not yet determined; it, however, is connected with the principle of life; for as soon as vitality is extinct, the animal no longer shines. This light does not proceed from the whole body, but from the last segment but one of the abdomen, and seems to be given to the animal as a beacon to her mate, her winged partner, who not only differs from her in not possessing this light so brilliant, but also in having a pair of wings to fly with. Another insect of this class, well known, and which, although small, on account of its destructive habits gains considerable attention in this country. I allude to the Turnip-fly. The ova or eggs of this insect appear to be deposited upon the seed of the Turnip before they are planted; whilst the seed of the plant is growing the ova of the Turnip-fly do the same; and as soon as the young Turnip appears above ground, it has its little enemy ready to destroy it. Amongst the leaves of young Turnips they may be seen at any time of the year, hopping about like Fleas. Great rewards have been offered for a means of getting rid of this insect, but at present all efforts have been vain, and some years our Turnip-crop is entirely spoiled by the destructive ravages of this apparently insignificant agent. The greater proportion of this order live on vegetables, and some subsist upon solid wood of any kind, &c.

The next order is that to which the Butterflies and Moths belong; it is called *Lepidoptera*, or Scale-winged. These insects are generally admired, not only on account of the lavish profusion with which the Creator has adorned them with the most lively and agreeable colours, but also by reason of the elegant and graceful manner in which they sport about the fields and gardens during the most pleasant season of the year.

Hemiptera, or the Half-winged order, includes the Grasshoppers, Cockroaches, Locusts, Bugs, and other insects of that kind. They are among the most singular-looking insects we have, their legs, bodies, and wings resembling dried sticks and leaves more than any thing else. Some, however, are very beautiful, as the green Locusts and others. These are the animals which, passing over the lands of the East, go in such prodigious numbers, that they carry desolation wherever they appear.

Those large insects, with nerved transparent wings, and called Dragon-flies, belong to an order to which the name *Neuroptera*, or Nerve-winged, is given. They are the most voracious insects we have, preying unscrupulously on the

smaller kinds of Flies. They fly along with their mouths wide open, and swallow every thing in their way.

The next order is interesting, as it includes that well-known and industrious little insect the Bee, which, as SOLOMON observes, "though they are little among such as fly, their food is the chief of sweet things."

All these insects are furnished with a sting; they are amongst the most skilful of insect architects, a better illustration of which need not be given than the comb of the Honey-bee. They are called *Hymenoptera*, or Membrane-winged.

The last order is *Diptera*, or the Two-winged insects. They include the Gnats and all kinds of Flies that are furnished with but two wings.

This will conclude our slight sketch of the varied forms of animals which are technically called *Invertebrate*, from the fact of their possessing no vertebræ or back bone. Their structure, though in many instances very complicated, falls far short of the surprising variety and adaptation which we find in the higher classes of animals. They form a part of the animal kingdom which serves to introduce us, as it were, to the wonderful structure and instincts of that division of animals at which Man stands at the head.

After the last class mentioned, we arrive in the ascending scale at the class of fish, whose forms become more complicated as we pursue them, from those simple fish with nothing more than a cartilaginous backbone, to those which have osseous skeletons, furnished with powerful osseous ribs, fins, and scales. From the fish we pass by an almost imperceptible gradation to those amphibious animals, as the Frog, Toad, and Salamander; from these, again, we arrive at the Reptiles, including the Turtles, Crocodiles, Alligators, and Snakes, and those animals of prodigious magnitude that have been exhumed from the strata of the earth. After these we find a higher and more perfect organization in the light and active members of the feathered creation. On leaving the birds, we find the tribes of *Mammalia*, exhibiting still more evident traces of superior adaptation, in all their parts, to the circumstances in which they are placed; at the head of which, displaying a structure more complicated, powers more perfect, and an adaptation more complete than any exhibited by preceding animals, stands Man, "the beauty of the world, the paragon of animals." Man stands in the world supreme, and, independent of the divine gift of reason, exhibits a structural perfection that would point him out as the master-work of the Creation. But there is given to him a principle denied to other forms of animated beings, a principle that connects him with all that is below him in creation, and with all that is divine and spiritual beyond the bonds of matter, and the records of time. It is because he possesses this principle that he can survey the world we live in, measure its ponderous movements through space, expose the elements of which it consists,

investigate its "mineral strata," weigh the very atoms of which it is composed, and from its vast treasures supply himself with objects to minister to the high powers with which he is gifted. It is because he possesses this principle, that all the world produces are objects of interest to his mind. He looks upon a world filled with beauty, and sees that it is made for him; the tender blade of Grass, the fruitful Vine, and stately Palm, were all made to subserve his purposes. The animal kingdom also, throughout the numerous tribes that we have glanced at, all are the servants of Man, and they are his because he possesses a mind to see their adaptation to his purposes, and to comprehend the relation in which they stand to him as their lord and master.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 21.)

Asarum.—Ασαρον, from *a*, neg., and σαιρω, to adorn; because it was not admitted into the ancient coronal wreaths. Or perhaps from *haraza*, Arab.

Asarum Europæum, Common Asarabacca.—The powdered leaves are used to provoke sneezing; a few grains at a time may be safely taken, and they produce a considerable discharge of fluid by the nostrils. The herb increases plentifully by seed, without any care, as well as by root, in dry sandy situations. The roots emit, when bruised, a very peculiar scent, partaking of pepper and ginger. Prior to the introduction of ipecacuanha, the leaves and root were frequently employed on account of their emetic power. The dried roots have been generally imported from the Levant, those of our own growth being supposed weaker.

Asparagus.—Ασπαραγος, from σπαρασσω, to tear; and that, according to Theis, from *spen*, a spine, in Celtic, which is the root of many words in Latin, French, German, and English. The term ασπαραγος was originally applied to all tender shoots of plants.

Asparagus officinalis, Asparagus, corruptly Sparrow-grass, or Grass, Sperage.—The young shoots of this plant, in its cultivated state, are universally esteemed for their flavour and nutritious qualities. The varieties called Gravesend, Battersea, &c., are produced by the difference of soil and manure. A very thick and gigantic kind, but equally agreeable to the palate, has lately been introduced from Switzerland. They impart to water a strong odour. A peculiar species of *Chrysomela*, named after the plant, lives upon it.

Asperugo.—From *asper*, rough; eminently applicable to this, even among the group of *Asperifoliæ*.

Asperula.—Diminutive of *asper*, rough; descriptive of the fruit; though not applicable to every species.

Asperula cynanchica, Squinancy-wort, Quinsy-wort.—The flowers have a great degree of beauty, being white or blush-coloured, elegantly marked with red lines. They have a sweet smell, which, however, like that of Woodroof-flowers, is rarely to be perceived. Dalechampius seems to be the chief authority for the reputation this plant has acquired in the cure of the quinsies, from which its name is taken.

Asperula odorata, Sweet Woodruff, Woodderowffe, as spelt in some old authors. The repetition of the double letters affords great amusement to children learning to spell (w-oo-dd-e-r-o-w-ff-e). The scent of it is said by Linnæus to drive away Ticks and other insects. It gives a grateful flavour to wine, and is used for that purpose in Germany. Cows, Horses, Sheep, and Goats eat it. The strongly aromatic flowers infused in water far excel in flavour the teas imported from China. The herb, while drying, has the scent of new hay, approaching to bitter Almonds, or *Heliotropium Peruvianum*, of which it retains a portion some time. The edges of the leaves stick to the hands, or clothes, in a manner almost peculiar to the rough plants of this natural order, caused by the minute hooked bristles to which that roughness is owing. The English names of this plant in old authors are very various: Turner, in his *Herbal*, published in 1568, calls it Wood-rose, or Wood-rowell, from the whorls of leaves resembling some kinds of rowels of spurs. Gerarde, Woodrooffe, Woodrowe, and Woodrowell. Parkinson, Woodroofe.—*British Flow. Plants.**

Aspidium.—Ασπις, ασπιδος, a shield, which its involucres resemble, especially in the species of the first division.

Aspidium lonchitis, Rough Apine Shield-fern.—Sir J. E. Smith says, that "this plant dwindles rather than becomes luxuriant when cultivated," as it often is on rockwork, &c., forming a curious, rigid, and pretty plant, not in any way altered from its original characteristics, except in becoming less spinous. The American is more spinous than our plant.—*British Ferns.*†

Aspidium oreopteris, Heath Shield-fern. The fresh plant may instantly be known from all congeners, by the smell emitted when drawn through the hand, or by holding it up to the light, in which situation it shows, very plainly,

* *British Phenogamous Botany*; or, Figures and Descriptions of the Genera of British Flowering Plants. By W. Baxter, A.L.S., F.H.S., &c., Curator of the Oxford Botanic Garden. Oxford: *J. H. Parker*; and *Whittaker and Co.*, London.

† *An Analysis of the British Ferns and their Allies.* With Copper-plate Engravings of every Species and Variety. By G. W. Francis. London: *Simpkin and Co.*

translucent minute points, very similar to those seen in *Hypericum perforatum*, though, be it observed, that unfavourable situation and cold weather will often prevent the formation of, if not obliterate, these odorous pores. They are most abundant when the plants grow in sunny but not too dry localities.—*British Ferns.*

Aspidium filix-mas, Male Shield-fern.—The large size, robust appearance, and decided character of this plant, obtained for it very early and very aptly the name of Male Fern. Medicinal properties of some importance have been ascribed to it, and with justice. It is retained in most of the Pharmacopoeias of Europe as a specific for the larger kinds of intestinal Worms; is used very extensively for that purpose by the faculty in many parts of the Continent; and if the employment of it has been discontinued here, it is not because of its inutility, but from the discovery of other remedies equally potent and better understood. The stem and roots are bitter and astringent, and have been used instead of Hops.—*British Ferns.* The Siberians boil this Fern in ale, and are fond of the flavour which it imparts. In the reign of HENRY the Sixth, so great a famine prevailed, that Fern-roots were used for the purpose of making bread. It would now be difficult to ascertain the exact species, but probably the largest and most common kind. This Fern and *Pteris aquilina* are burnt together for the sake of their ashes, which are purchased by soap and glass-makers. The island of Jura alone yields one hundred and fifty pounds worth of these ashes annually. GUNNER relates that in Norway the young curled leaves are boiled and eaten like Asparagus; and that the larger leaves, dried and infused in hot-water, afford an acceptable fodder and litter for cattle, in hard winters. It is used for rough thatching and beds, as the Highland Heather. The larger Ferns, either dug in, or burnt on, the ground, enrich the soil greatly by their saline particles; and thus HORACE, though not without a moral inference, Lib. 1, Sat. 3, 37—

"*Neglectis urenda Filix innascitur agris.*"

Scarcely any production of a tropical climate can present a more truly elegant appearance than does this and the sister Fern, of luxuriant growth, as fringing or feathering the high banks of the narrow lanes of South Devon. The Scotch term *Bracken* (like Gowan) Dr. WITHERING conceives to be rightly understood as generic, including several different plants; and thus it would seem to be almost indifferently applied both to our present species and *Pteris aquilina.*

THE NATURALIST'S LITERARY PORTRAIT GALLERY.*

(Continued from p. 33.)

No. II.—Edward Bevan, M.D.

Dr. Bevan, the gifted subject of the following memoir, was born in London on the 8th of July, 1770. He had the misfortune, in early infancy, by the death of his father, to be deprived of his natural guardians, and the shelter of the parental roof. He was therefore removed to the house of his maternal grandfather, Mr. Powle, of Hereford; and under the judicious care of Mrs. Powle and her youngest daughter—whose talents and attainments were of no ordinary standard—was laid the basis of that moral and intellectual strength which marks his life.

At the age of seven he paid a visit to his uncle, Mr. John Powle, a medical practitioner at Wootton-under-Edge, with a view, as he afterwards learnt, of determining his future career. This gentleman elicited such evidence of his little nephew's dawning power and mildness of disposition, as, in three days, led to his permanent adoption. Here, again, he had the advantage of refined female influence: the moral precepts and literary graces, sown by Mrs. Powle, expanded luxuriantly in the ready soil, and have supplied a rich garner, of which all within the reach of his beneficence have liberally participated.

These female influences are especially dwelt upon, as confirming a general opinion, and more particularly that of Dr. Bevan himself, that the bias of character is usually stamped by the mother, upon whose early cares mainly depend the principles and habits, which subserve every future stage of life.

At eight he was placed at the grammar school at Wootton, where he remained four years. At the close of his third year, his diligence and abilities had placed him at the head of the school: a position in which his diminutive stature, as compared with the majority of his school-mates, made him singularly conspicuous.

At this era he had a second time the misfortune to become an orphan, by the death of his kind adopters, who, having no children, bequeathed to him the bulk of their property. He now returned once more to his grandfather, who entered him at the College-school in Hereford, where he remained until of a suitable age to commence that course of professional study which he was destined to pursue.

In testimony of the efficacy of those principles with which his mind had been imbued by his instructors, his inflexible regard for veracity may be adduced, an early test of which is worth recording. During the first few months of his medical pupilage, he was desired, by his preceptor, to say to an inquiring patient,

* This series—including zoologists, botanists, geologists, and meteorologists—will be continued every alternate month, each memoir being accompanied by a portrait and autograph.—Ed.

"not at home!" Revolting at the falsehood, he omitted the "not," for which he received an angry reprimand, ending with, "You are so d———d conscientious, sir, you can't tell a lie!" He reaped, however, the full benefit of his unflinching integrity; for through the remainder of his noviciate no similar concession was demanded, though traps were occasionally laid, to ascertain whether he would be equally scrupulous when the expediency affected himself. That his principles remained unsullied, his preceptor bore honourable testimony, after his engagement expired. The same scrupulous observances have ever adhered to him, and he has frequently remarked in conversation, that the modern practice of explaining away the deceit of "not at home," is undermining the veneration for truth.

Though in the choice of a profession he submitted to the wishes of his friends, his own mind was early and strongly disposed towards the church; perhaps rather as a matter of taste, for its abstract associations, than from any higher motive; for though the wish was indefinitely cherished, yet when he had arrived at years of maturity, and took "*Nullius addictus jurare in verba magistri*" for his motto, he admitted that a profession had been selected for him more suited to that spirit of free inquiry, by which his mind was prominently characterized from a very early period.

At every stage of his progress his aim was to excel, not to rival his compeers, and during three sessions of attendance on the lectures of his instructors, Austin, Latham,* and Abernethy, he acquired the honourable soubriquet of the indefatigable. Under the auspices of the late Dr. John Clarke, brother of the baronet, he commenced his course of private practice, at Mortlake, near London, with an elderly gentleman in whose family he remained nearly five years; still continuing to store his mind for those congenial pursuits which were the beacon lights of his career.

At the close of this engagement he settled on his own account, as a general practitioner, at Stoke-upon-Trent, in the Staffordshire Potteries, and after the lapse of a few successful years, he sacrificed his auspicious prospects to the claims of private friendship, and entered into partnership, at Congleton, in Cheshire, with a fellow-student whose health was declining, hoping thereby to impede the grogress of phthisis. But, alas! this act of benevolence proved abortive; the malady had advanced too far to be arrested, and at its melancholy close he complied with his friend's wishes, by succeeding to the whole of the practice.

His establishment in Cheshire was the era of his marriage with the second daughter of Mr. Cartwright, an apothecary in Salop, a man of some eminence, not merely professionally, but as being one of the last of the bishops of the self-constituted Primitive Christian Church. Mr. Cartwright educated his family

* Dr. John Latham, but not the celebrated ornithologist, whose portrait and memoir appeared in our October number.

with ability and success, and, by his judicious care, Mrs. Bevan was fitted to be the companion and auxiliary in all her husband's studies and pursuits. A niece of hers, adopted some years afterwards, was the link of the domestic circle in which the Doctor has often declared that his best enjoyments are centred—enjoyments to which he had unceasingly looked forward, with a hope that supported him under all the fatigues and anxieties of his professional life. This young lady has long been the amanuensis and coadjutor of her uncle.

After twelve years' residence in Cheshire, finding his health giving way, he prudently resolved to retire upon the moderate income he had acquired; but his friends, unwilling that his experience should be lost, induced him to resume practice in the vicinity of London,* under limitations suited to his state of health, and the pursuance of more congenial avocations. After practising there for two years, he permanently retired to a small estate which he had purchased in Herefordshire, at Bridstow, near Ross, where he commenced agriculturist, qualifying himself with his usual ardour, from every accessible source. His nominal retirement, however, has freely admitted the claims of benevolence. To need help was an appeal he could never withstand, as hundreds of his fellow-creatures are prompt to testify.

His attention to the Natural History and management of Bees commenced soon after he withdrew from public life; though, from a memorandum of the year 1794, he appears even then to have had them in his mind's eye. It was revived and fixed upon as a study in Herefordshire, where finding a hive of Bees on his newly-acquired property, he was induced by Mrs. Bevan to purchase them; and from her hive he gradually peopled his apiary, which induced him to enter upon the field of practical observation, and led to his subsequent research into apiarian lore. Incentives were multiplied afterwards by several eminent apiarians and naturalists with whom he became acquainted, namely, the Rev. Richard Walond, Thomas Andrew Knight, Esq., Robert Golding, Esq., and the Rev. William Dunbar. With the latter gentlemen and several others he has maintained a regular correspondence for years, and a comparison of experimental results; and to Mr. Walond he dedicated his first edition of the *Honey Bee*. This work was published in the year 1827, was well received, and established the author's reputation as a scientific apiarian. His attention to the honied race has known no abatement since, and has led to the accumulation of a body of valuable information which has recently been given to the world, in a second edition of the *Honey Bee*. This work has obtained the meed of approbation from almost every quarter, being regarded as "the most perfect and philosophical" that we have upon the subject. It his dedicated to Her Majesty, in a

* At Mortlake.

style peculiarly neat and appropriate; and we cannot withhold from our readers the terms in which it is spoken of by one of its reviewers;—"The dedication is a singularly felicitous production, affords a fair sample of the author's literary qualifications for his task, and as it is further recommended by its brevity, we make no apology for quoting it." Having presented his readers with a transcript of it, the reviewer concludes thus:—"In the collection of his materials, materials of the most curious and interesting character, Dr. BEVAN has laboured with a degree of industry that would do credit to the little insect subjects of his book." This work, with the exception of an occasional contribution to the periodical press, is all that the Doctor has ever published; but in the year 1822 he assisted his friend the late SAMUEL PARKES, Esq., in a revision of the third edition of his *Rudiments of Chemistry*.

In 1833 he joined that enlightened band of naturalists by whom the Entomological Society was established, entering it as an original member; but his distance from London has prevented his attendance on more than one of its sittings.

His personal expenditure is in all respects moderate, his diet of the simplest kind, his hours early, still rising at six; and, like his preceptor, ABERNETHY, he has for many years regularly taken a siesta after dinner. This was at all times his sovereign restorative. After the greatest fatigues of his laborious profession, to stretch his weary limbs on the carpet, for ten or fifteen minutes, at the feet of his wife, with her footstool for his pillow, would enable him to resume his toils far better than any internal cordial; and even now he finds his afternoon nap as refreshing as his night's repose, and a necessary stimulant to his invariable practice of reading aloud, for a couple of hours, to his family, after their afternoon coffee. The time which he devotes to study, as being the freest from interruption, is from six to eight in the morning, and an hour or two after he has retired for the night; that between breakfast and dinner has been chiefly appropriated to his extensive correspondence, his garden, and the fields.

Although playful, and even jocund, amongst his intimate friends, he is reserved towards strangers, and has never been able to subdue his repugnance to promiscuous society; generally avoiding engagements which would interfere with his ordinary habits. Though not possessing a robust constitution, his health has suffered few interruptions. His temper is remarkably placid; and if not impervious to annoyances, he is seldom excited to anger. It is pleasant to contemplate him in the unostentatious retirement to which his boyhood aspired; and in our wishes for his long, very long enjoyment of it, we cannot forbear the reflection that the attainment of our desires might cease to be so rare a felicity if, like Dr. BEVAN's, they were rationally and virtuously based.

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Our portrait of Dr. Bevan is taken from an oil-painting (by Mr. Edward Smith, of Hereford), which was kindly lent to us for the purpose. We are happy to state that the portrait of Dr. Latham was very favourably received, both by subscribers and by the public press. The lithograph of Dr. Bevan in our present number is in some points even superior to the former.

CORRESPONDENCE.

On the Nests and Eggs of British Birds.

To the Editor of The Naturalist.

Sir,—I write to you in behalf of myself and a few young friends in this neighbourhood, who are commencing the study of "Oology." On referring to your valuable *Text-book*, I find it stated, at p. 17, that Lewin's *Birds of Great Britain* contains a figure of the egg of each species, but that "these are often inexact and badly coloured." The only other work of the kind which you mention, either in the *Ornithologist's Text-book* or *The Naturalist*, is Hewitson's *British Oology;* and the high approbation which you award to it, induced me, like a prudent tyro, to inquire the price at a neighbouring bookseller's. I was informed that it was sold at 3*s.* 6*d.* a number, or about £2. 2*s.* each volume. Now I appeal to you, Mr. Editor, if this be not too high a price for the work? At all events, it was a *forbidding* one to me, and, I doubt not, to numbers of my fellow-students. Lacking plates, coloured or plain, perhaps you will not take it amiss if I express a wish that you would publish a few articles on British Oology in your Magazine. My former plan was to have collected whatever eggs I could find, and make out their names by Hewitson. I am now desirous of being instructed in the *localities* of nests, and the mode of going to work, which may perhaps be a more scientific method than the other.

The very high price at which works on Natural History are published, as compared with those on most other subjects, must be a drawback upon their sale, and a great inconvenience to intending purchasers. Strange to say, moreover, this applies more especially to the better class of books.

Your favourable attention to the "prayer" of your "humble petitioner" will much oblige. I am not aware that the publication of my name, "unknown to fame," will be of any advantage; and therefore I beg to subscribe myself,

Sir, your obedient servant,

Faversham, Nov. 5, 1838. G. F.

[The high price of scientific works, complained of by our correspondent, finds an easy explanation in the want of demand for such publications. As it is, they generally prove losing speculations, and would be much more so were they issued at a lower charge. As regards the *British Oology*, we consider that it is published at a fair price; and we have little doubt but the elegant and attractive character of the book would procure it extended patronage were it more generally known. Even at present, it is purchased by many persons who care but little for Natural History.

Provided we can find the time and room requisite for the preparation and insertion of the desired articles on Oology, we shall have much pleasure in publishing them. If Dr. Murray, Mr. Salmon, or some other correspondent competent to the task would divide the labour with us, and undertake the *Aquaticæ*, we shall be happy to treat of the *Terrestres*.—Ed.]

Query respecting Works on Natural History.

To the Editor of the Naturalist.

Sir,—Will you oblige me by informing me, in your next number, where I can meet with the best treatises on the various departments of Natural History, as far as British objects are concerned. I am a new subscriber to your pleasing and useful miscellany; if, therefore, this information has been previously afforded, perhaps you will be good enough to refer me to "chapter and verse."

I am, Sir,

Yours, &c. &c.

Leith, Oct. 27, 1838. G. C. Barton.

[An account of the principal works on Zoology in general, and the higher departments in particular, has been supplied in Vol. II., p. 462; on Botany, in Vol. II., p. 470, and Vol. III., p. 68; and on Entomology, in Vol. III., p. 19. We shall, however, enumerate one or two books in each department; and the deficiencies of them may possibly stimulate Mr. Barton to original investigation. On Mammalogy we have Professor Bell's *British Quadrupeds;* on Ornithology, Mr. Selby's *Illustrations of British Ornithology*, and Mr. Yarrell's *British Birds;* on Ichthyology, Yarrell's *British Fishes;* on insects, Curtis's *British Entomology;* on reptiles, Bell's *British Reptiles;* on molluscs, Dr. Fleming's article under that head, republished from the *Encyclopædia Britannica.* On Botany, Sir James Smith's *English Flora*, or Dr. Lindley's *Synopsis of British Plants.* On Geology, Dr. Mantell's *Wonders of Geology*, or Prof. Phillips's *Treatise on Geology.*—Ed.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

BOTANICAL SOCIETY.

Sept. 7.—C. Johnson, Esq., V.-P., in the chair.—The Secretary read a paper from the Curator, being "Observations on a New Principle of Fencing, constructed by Mr. Breese, formed according to the Laws of Vegetable Physiology." It is, in fact, a natural living fence, and consists simply of growing and planting for the purpose trees, or shoots of the same species, or species of the same genus, and causing them to unite by means of the process of "grafting by approach or inarching." A trench being made around the ground intended to be inclosed, the young trees or shoots are then planted in two directions a foot from each other, one set, for example, pointing or sloping towards the north, the other set sloping towards the south; where they cross each other, the bark is removed on both stems, and the two stems are then tied together; in the course of a few weeks they unite, and a natural living fence is formed, acquiring additional strength every year by the deposition of new wood sent down from the upper portion of the shoot bearing leaves, &c.—A paper was also read from the Curator, being observations on a variety of *Polygonun aviculare* called *P. marinum* of Hudson, specimens of which were exhibited, collected in Kent.

Oct. 5.—A specimen of *Matricaria chamomilla* (differing from the common state of the species in the florets of the ray being very short, and rather fewer than in the common one) was exhibited by Mr. W. Baxter. A specimen of *Arenaria Norvegica*, from Unst, Shetland, was also exhibited.—Mr. Breese exhibited a portion of his living fence, and further remarks were made, by Mr. Daniel Cooper, on its utility.—Mr. J. Rich communicated a paper, translated from the French, "On the Formation of Crystals in the Cellules of Plants," which led to some discussion.

ZOOLOGICAL SOCIETY.

Oct. 9.—Rev. F. W. Hope in the chair.—The reading of an elaborate paper, descriptive of the osteology of *Marsupialia*, was commenced by Mr. Owen, who remarked upon the great value of an acquaintance with the structure of the skeleton in determining the genera and species of this group of animals, and proposed a new genus, *Thylacomys*, for certain species presenting a peculiar conformation of the cranium. In treating of the maxillary bones, Mr. Owen said he was induced to enter more largely into details, from the great interest attached to the fossil jaw found in the Oolitic strata at Stonesfield, and the doubts which had lately been expressed by M. de Blainville as to its true

mammiferous character. Mr. Owen had examined four specimens, of which one is in the Museum at York, another in the collection of Mr. Broderip, and the other two in the possession of Dr. Buckland. The double fangs to the molar teeth, and the ramus of the jaw being formed of a single bone, Mr. Owen thought sufficiently attested the mammiferous nature of these remains; while minor anatomical characters led him to regard them as belonging to a marsupial genus.

Mr. Martin read a paper, in which he described a peculiarity in the dentition of two species of the genus *Certhopithecus*, and illustrated his views by the exhibition of several crania in the Society's possession.—Lastly, a letter was read, by Mr. Owen, from Drury Onley, Esq., of Exeter, calling the attention of the Society to some points of interest in the anatomy of the Coypou.

Oct. 23.—Mr. Yarrell in the chair.—Letters were read from the following Corresponding Members of the Society. M. Julian Desjardins, Secretary of the Natural History Society of Mauritius, stating that it was his intention to leave that island on the 1st of January next, for England, with a large collection of objects in Natural History, many of which he intended for the Society. —From Col. P. Campbell, dated Alexandria, to the effect that he had not yet succeeded in gaining any further information respecting the possibility of procuring some white Elephants for the menagerie in the Regent's Park.—From Lieut.-Col. Doherty, Governor of Sierra Leone, stating that he was using every exertion to procure for the Society a male and a female Chimpanzee, in which attempt he fully expected to be successful, but he feared that he should not be able to obtain a living specimen of the Hippopotamus, from the superstitious dread with which the natives regard these animals.

Mr. Owen concluded his treatise upon the osteology of *Marsupialia*, the reading of which he had commenced at the previous meeting. His paper embraces the details of the entire skeleton, with a description of the various modifications which it assumes in different marsupial genera. Mr. Owen remarked, that when Major Mitchell first submitted to his inspection the fossil marsupial bones discovered by that gentleman in Australia, he was unable to speak with confidence upon their probable affinities; and that for his own satisfaction, and with a view of assisting the subsequent researches of naturalists in that portion of the globe, he had entered upon the examination of all the accessible skeletons of marsupial genera, for the purpose of drawing up a complete history of their comparative osteology.

Mr. Waterhouse exhibited the skulls of several specimens of the genus *Galeopithecus*, for the purpose of pointing out certain osteological peculiarities, which he thought of material importance in determining their specific characters.

Mr. Blyth read a paper "On the Dentition of the Lemurs, in which he endeavoured to explain a supposed anomaly in their dental formula, by regarding

that tooth to be the first false molar, which had hitherto been looked upon as the inferior canine.

Mr. Blyth afterwards exhibited the head of a Cumberland Ox of most gigantic size, and of which the two bases of the horns measured seven feet in circumference.

ROYAL SOCIETY AND CENTRAL SCHOOL OF HORTICULTURE AND AGRICULTURE.

On Wednesday evening, April 11, Professor Johnson commenced a second course of lectures on Botany, at the rooms of the Society, Egyptian Hall, Piccadilly, which was very numerously attended. His remarks were principally directed to the Grasses and other descriptions of plants furnishing food for Man. With regard to the great consumption of the productions of the former, the lecturer stated, that the estimated daily consumption of Barley and Wheat in England and Ireland was 1,238,096 bushels; that there were besides annually consumed 100,000 bags of Rice and 450,000,000lb. of Sugar. In addition to these might be stated animal food and productions which were derived from the nutriment afforded by the Grasses for food. In London the annual consumption of butchers' meat was 155,000,000lb.; of cheese, another production of Grasses, from Cheshire, 11,500 tons, and from Warwickshire, 20,000 tons, besides that obtained from other parts; of butter 50,000lb., the production of 300,000 Cows. In London also, for the supply of the inhabitants with milk, there are kept between 9,000 and 10,000 Cows, each of which yielding on the average nine quarts, gives an annual consumption of 30,000,000 quarts. In speaking of the composition of vegetable substances, he also remarked that phosphate of lime was contained in such quantities in grain that any person who eat one pound of bread daily would consume nearly four pound of lime in the course of the year. So essential was this to animal growth, that Dr. Paris found that if a hen broke her leg, the eggs would be laid without shells, which are principally lime, this being required for the cure of the fracture.

NORTHUMBERLAND NATURAL HISTORY SOCIETY.

A general meeting was held, Aug. 27, the Bishop of Durham, Vice-President, in the chair.—A great many of the leading naturalists connected with the British Association were present. Mr. Hutton, the Secretary, read the report of the Committee, which congratulated the members upon the advancement of the Society. The Treasurer's advances had this year exceeded the income, but extraordinary expenses had been incurred for preparations for fossils and other organic remains.—A very valuable present of Corals had been received from the Earl of Tankerville, and a promise had been made by the Emperor of Russia,

through an application of Lord Durham, of a collection of minerals from Siberia. They had received intimation of the shipment of nine cases of specimens, containing 949 specimens. The ornithological department had received valuable presents from the Duke of Northumberland and other contributors, and it would soon be necessary to make an addition to the buildings for their accommodation. The public generally had been admitted to the museum, with very slight restrictions, and no less than 30,000 persons had been admitted within the last twelve months, whilst it was satisfactory to state that no damage or abstraction of specimens had occurred.

DURHAM SCHOOL OF CIVIL AND MINING ENGINEERS.

In connexion with Geology and Mineralogy, we are happy to hear that this Institution is in a very flourishing condition. The number of members has been doubled during the present term, and the first year's students have passed their examination in a highly creditable manner.

PHILOSOPHICAL AND LITERARY SOCIETY OF ST. ANDREWS.

The ordinary monthly meeting took place June 4. The President, Lord William Douglas, having explained that business would probably call him away before the close of the meeting, on the motion of Sir David Brewster, Dr. Cook, Vice-President, was called to the chair. Many valuable specimens were then presented to the Society. Sir D. Brewster read a very interesting paper on certain varieties of fluids, and of moveable crystals and floculent matter observable in the Topaz.—Mr. George Buist gave some account of certain remarkable carved stones to be seen in various parts of Scotland and Ireland, of many of which he exhibited drawings.—The Rev. C. Lyon read an elaborate and able paper on the origin and history of the Culdees.—Sir David Brewster gave some account of the teeth of Saurian fishes found in the Parrot-Coal brought from Halbeath (only), and used at the gas-work, St. Andrews. This tooth measured in extreme length two inches; and in circumference at base, two inches and a half. Its colour was a fine velvet black, its lustre vitreous, inclining to resinous; when broken across and examined by a microscope, it exhibited a section, like the cross cut of a Fir-tree. On a rude analysis, it seemed to be composed chiefly of Bituminous matter, with a small trace of Lime, probably in the state of carbonate, as no indication of phosphoric acid could be distinguished. The matter of the bone had in this way become by some means entirely withdrawn, and a totally new and quite different substance substituted in its place. This new matter, while in a state of solution, had most probably been deposited in the layers seen in the cross section. There was no vacuity in the core of the

tooth, as in those described by Dr. Hibbert, and found at Burdie House—indicating, from the extent to which they differed from those, how greatly the transmuting process was modified by the circumstances and elements amidst which it took place. Sir David mentioned the case of nuts which he had seen where the shell and calyx were quite entire and unchanged, but the kernel had wholly disappeared—dissolved in water, or resolved in some way, so as to escape through the woody walls which surrounded it; as also a case of decayed Birch-trees which he had seen immersed in water, where the wood had entirely vanished, though the bark remained entire. This was filled up with Sand and earthy matter from the river, so that we had passing before us an operation which might to a considerable extent solve some of the difficulties of geologists. Were we to suppose a Sand-bank to surround these destructible cortical integuments, and the whole to be ultimately converted by induration into rock, we should then have Sandstone casts of the Birch divided from the Sandstone in which they were embedded by a layer of Coal or Carbonaceous matter, similar to that which we now see surrounding the fossil trees of the Coal formation.

The rest of the transactions seemed chiefly to refer to details affecting the more minute business of the Society; we may observe that we were struck with the sensible and clear-sighted manner in which these were conducted. The old Latin class-room is fitting up as a museum for the Society; and an Antiquarian Committee was appointed to collect and arrange the relics of other times, with which every part of St. Andrews so greatly abounds, but most of which have for many years been most grievously neglected. We understand that the old chapel of St. Leonard's has been selected as a receptacle for those monuments which will not take damage by exposure in the open air, and which might be too ponderous or bulky for being placed in the ordinary museum. This is at length setting about a task with spirit, and in the right way, which St. Andrews has for many a weary day greatly stood in need for some one fittingly to discharge for her. Already have several monuments of much historic interest been discovered—amongst others, those of Robert Stewart, commendator of St. Andrews, and afterwards Earl of Lennox; and of Principal Wilkie, the immediate successor of George Buchanan.

The following gentlemen were appointed honorary members:—The Rev. T. Crawford, Cults; A. Russell, Esq., Leuchars Castle; R. Scott, M.D., Leuchars; and Walter Foggo Ireland, Esq., banker, Tredegar.

WARRINGTON PHRENOLOGICAL SOCIETY.

Since our last notice of this Society (Vol. III., p. 205), owing to the summer vacation having intervened, only three papers have been read, viz., "On Courage

and Fear," by Mr. W. Robson; "On the Organ of Music," by Mr. John Rylands, Jun.; and "On the Anatomy of the Brain" (illustrated with dissections), by Mr. Grierson, surgeon.

The annual meeting was held Oct. 5, when the following gentlemen were elected officers of the Society:—*President*—Mr. W. M. Grierson, F.R.C.S.E.; *Vice-President*—Rev. J. Molyneux; *Treasurer*—Mr. R. Gaskell; *Corresponding Secretary*—Mr. William Robson; *Secretary*—Mr. T. Glazebrook Rylands; *Honorary Curator*—Mr. J. P. Lane, surgeon; *Hon. Librarian*—Mr. Peter Rylands; *Council*—John Davies, M.D., Mr. G. W. Hardy, surgeon, Rev. C. T. Sevier, and the Officers.

The number of busts, skulls, &c., in the museum is about 130.

A few months since, a Deputation from the Society was sent to Liverpool to take a cast of William Hill, who was executed for murder at that town. A Sub-committee, consisting of Messrs. Lane, P. Rylands, and W. Robson, has been appointed to draw up an account of Hill's character, &c., which, together with a copy of the bust, will be sent to the Edinburgh, Glasgow, and Manchester Phrenological Societies, and to Hewett C. Watson, Esq.

The progress of the Society fully equals the anticipation of its founders.

SWANSEA LITERARY AND PHILOSOPHICAL INSTITUTION.

We are extremely glad to find that the third annual report, for 1837–8, represents this Institution in a very flourishing and satisfactory state. It consists of about 200 annual subscribers of one guinea each, who have an equal interest in the funds and property of the Society. It ranks among its members—as every similar Institution ought to do—the principal families and nobility in the neighbourhood, notwithstanding which there is an entire absence of all aristocratic feeling. The rooms are open every day, Sundays excepted, from eleven o'clock in the morning to three in the afternoon, and from seven to nine in the evening. Each subscriber has the power of introducing all the females and minors of his own family, and has also the privilege of admitting strangers on entering their names with his own in a book kept for that purpose; but no person is to be considered a stranger who has resided in the town for more than three months, or who resides within twenty miles of it. Any inhabitant of the town may be introduced once a year by a subscriber.

His Grace the Duke of Beaufort, K.G., is Patron. L. W. Dillwyn, Esq., M.P., F.R.S., F.L.S., F.G.S., &c. &c., is President; and the following are Vice-Presidents:—The Mayor of Swansea; Lieut.-General the Right Hon. Sir P. Hussey Vivian, Bart., K.C.B.; J. H. Vivian, Esq., M.P., F.R.S., F.G.S.; C. R. M. Talbot, Esq., M.P., F.R.S.; Sir John Morris, Bart.; J. Dillwyn Llewellyn, Esq., F.L.S.; Rev. William Hewson, D.D. The following gen-

tlemen are appointed to act as Honorary Curators and Honorary Librarian for the current year:—Library, Richard Higgs; Antiquities and Works of Art, Rev. J. G. Brock; Conchology, J. G. Jeffries; Entomology and Botany, J.W. G. Gutch; Geology, W. E. Logan; Mineralogy, D. Nicol; Zoology, L. L. Dillwyn; Laboratory and Apparatus, R. W. Byers.

The proposal for the erection of a building by shares, for the purposes of the Institution, has met with great success; the necessary funds have been raised, and a plan adopted, complete in every anterior arrangement, and possessed of an external character which will render the building at once a credit to the Society and an ornament to the town. The building is to include a library, museum, and lecture-room; and it is proposed by the Committee, at the suggestion of Professor Airy, that arrangements should be made for the erection of a transit instrument, which would prove of great benefit to the port, in the scientific as well as commercial advantage which it would confer. The report is exceedingly well-arranged, and contains a variety of useful information on the mercantile and medical statistics of the town and neighbourhood, and a list of the Society's desiderata in British birds, besides notices of the lectures and papers delivered before the Society. There is a valuable meteorological journal appended to the report by Mr. J. W. G. Gutch, and a tide table, obtained by the use of a self-registering guage, erected by the assistance of the trustees of the harbour, and under the direction of Mr. Bunt, of Bristol, who has for some years past been actively engaged in investigating the phenomena of the tides.

The museum of the Society has received a considerable accession during the past year, among which we notice a very valuable collection of curiosities obtained during Capt. Ross's visit to the Arctic regions, presented by Lady Mary Cole, of Lanely, and a collection of between 300 and 400 specimens of colonial produce, presented by Mr. F. Taylor, of Liverpool. S. L. Dillwyn, Esq., has presented several manuscript works on the Natural History of the neighbourhood, one particularly on Botany, which will be of great assistance to any strangers visiting the town. The same liberal and talented gentleman has printed at his own expense a list of the *Coleoptera* occurring round Swansea, which must prove of great use to any entomologist willing to assist the Society in making exchanges of specimens.

Several fossil *Sigillaria* have been discovered in Cwm Llech Vale of Swansea, by Mr. Logan, of which two specimens have been left *in sitû*, an excellent engraving of which accompanies the report. Two gigantic specimens which have been extracted will be placed in the new building when it is completed.

Some curious impressions in Clay of the feet of Deer and cattle have been presented to the Museum. They were cut out of an alluvial deposit of hard blue Clay, under a thin stratum of peaty matter, overlaid by about twenty-three

feet of blown Sand, at the mouth of Pembroke New Harbour, on making an excavation for the entrance of the Dock. The surface on which the prints existed is only exposed at the ebb of spring tides, and is wholly covered at the ebb of neaps by several feet of water. The impressions were very numerous, and the track of an individual animal could occasionally be followed for several paces. The antlers, the jaw-bone, and several ribs of a Deer were found at the place, and some of the latter have also been presented to the Museum.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

1. Chinese Method of preparing Eggs.—Eggs of certain Ducks are prepared in China so as to keep for one or even two years. For ten eggs they take half a pint of ashes of Cypress-wood, or Bean-stalks (some use potash), three-eighths of powdered Chalk, and two ounces of pulverized coarse Salt. This is wetted with a strong infusion of tea, so as to form a paste, with which the eggs are entirely covered; they are then put into an earthen vessel and hermetically sealed.

2. Spermatic Animalcules in Plants.—Some years ago, Prof. Unger announced his discovery of animalcules of the genus *Vibrio*, in what are called the anthers of a Moss, belonging to the genus *Sphagnum*. Recently, M. Meyen, Professor of Vegetable Anatomy of Berlin, has met with the same phenomenon in the so-called anthers of *Chara*, *Marchantia polymorpha*, and *Hypnum argenteum*. He describes the animalcules as contained singly in the interior of the mucilaginous cells of those bodies. When the little animal is completely formed, the partitions between the cells disappear, and the creatures are then seen, rolled up spirally, and packed along the sides of the pollen-thread. The membrane bursts upon the application of water, when the animalcules are set free, and their large head is carried forward, curving and bending, while the slender tail remains adherent to the pollen-thread. Eventually, they become entirely free, unroll, and swim about the water, the tail foremost. This latter is very slender, twice or thrice as long as the head, and is described as having a rapid and most curious motion. In some cases, the tail is so transparent as to be hardly visible; but it is stained yellow by the application of iodine, which kills the animalcule, but reveals its structure. At the meeting of the Institute when these facts were mentioned, Baron Humboldt, who was present, stated, that he and M. Muller, the Professor of Anatomy at Berlin, had witnessed the phenomenon described by Prof.

Meyen, and that the movements of the animalcules appeared to them analogous to those of many *Infusoria*.

BOTANY.

3. Musical Tree.—In the neighbourhood of St. Quentin stood a remarkable tree, from whose roots dull sounds were frequently heard to issue. It had excited much surprise and alarm among the inhabitants of Nauroy, and the circumjacent parishes, but the mystery is now unravelled. The enchanted tree is a very strong Beech, at the summit of which two branches crossed each other in such a manner, that when the wind blew, a vibration took place, which resounded as far as the roots. By order of the Mayor, the axe has destroyed the charm, and imparted tranquillity to many a troubled spirit.

4. Fermentation an Act of Vegetation.—M. Turpin has lately published his observations upon certain phenomena, which he considers sufficient to show, that the act of fermentation, concerning which chemists have been so much embarrassed, is owing to the rapid development of infusorial plants. He states, that all yeast, of whatever description, derives its origin from the separation from organic tissue, whether animal or vegetable, of spherical particles of extreme minuteness, which particles, after a certain time, rise to the surface of the fluids in which they are immersed, and there germinate. Their germination is said to be caused by a certain amount of heat, and by contact with atmospheric air. The carbonic acid obtained by fermentation is ascribed to the infusorial plants. M. Turpin considers the act of adding yeast to liquids, when fermentation is languid, as equivalent to sowing millions of seeds in a favourable soil. He calls the yeast plant of beer *Torula cerevisiæ:* he considers each infusion to have its peculiar plant, and he names the whole race of such beings *Levurians*. No doubt the yeast of beer consists of minute molecular matter, the particles of which are globular; and that those particles produce, from their sides, other particles like themselves, which eventually separate from the parent, but we do not know that they are *therefore* plants.

5. *Maclura aurantiaca*.—The North-American diœcious tree named *Maclura aurantiaca*, is now growing in France, both male and female, and flowers in the Luxembourg gardens, in the royal establishment at Neuilly, and at Avignon; its wood is said to be elastic; it is beautifully veined, of a deep yellow, a fine grain, and takes a beautiful polish. Numerous experiments have proved that its leaves are perfect substitutes for those of the Mulberry, for the nourishment of Silkworms, making it a desirable object for cultivation, as it does not suffer from the severest cold, and flourishes even in a poor soil. The fruits are not edible, but the roots yield a fine yellow dye.

6. New Dye-plant.—In the south of Russia, numerous tufts of Harmala, or

Rue of the steppes, has been remarked. It is called "Inserlik" by the Tatars, and its botanical name is *Peganum harmala*. It sometimes covers extensive plains in the Tatar country; its root is strong and coriaceous, resists the plough, and is an invincible obstacle to cultivation. It is not useful for cattle, its odour being so disagreeable that they will not touch it, but it is likely to prove of immense service to the Russians in their manufactures. Attempts were formerly made to dye cloth of a red colour with the seeds, but it was a complicated process, and has been since abandoned: M. Goebel, Professor of Chemistry at the University of Dorpat, having analysed these seeds, has ascertained the nature of their colouring matter, and invented a much simpler method of extraction. It is superior to most of the ordinary substances which produce seeds, serves equally well for silk, wool, cotton, and linen, presenting every shade from rose to crimson, and not being subject to fade. Half an ounce of the extract is sufficient for dying six square archines, or more than three yards, of a deep crimson.

GEOLOGY.

7. Unknown Fossil.—A gigantic vertebra has been found near Nancy, more than a yard in circumference. It was much injured by the Vine-dresser who discovered it, which renders it difficult to ascertain to what animal it belonged.

8. Fossil Palm-tree.—In a Coal-mine, near Charlêroi, at a depth of 1,100 feet, a fossil Palm-tree, the trunk of which is 36 inches in diameter, has lately been found in a vertical position, with its roots fixed in the substratum. It is about to be transferred to the cabinet of Natural History at Brussels.

9. Descent of the *Marsupiata*.—The attempt of De Blainville to curtail, by a few thousand centuries, the period through which the interesting family of *Marsupiata* now trace back their descent, seems likely to be frustrated, by the determined opposition which has followed the publication of his ideas respecting the *reptilian* affinities of the Stonesfield relics. We suppose the affair will end by the learned Professor having quietly to pocket his genus *Amphitherium*, until some future discovery shall either completely set the matter at rest, or afford more substantial reasons than those hitherto advanced for doubting the accuracy of Cuvier's discrimination. Mr. Owen has addressed the Zoological Society on the subject, stating, that the examination of *four* specimens has fully satisfied him that the jaws in question are undoubtedly those of a *Mammiferous* animal, and probably referable to the *Marsupial* order. This confirmation of the view entertained by Cuvier, from an anatomist so eminent for his knowledge of Comparative Osteology as the Hunterian Professor at the College of Surgeons, in addition to what has been advanced by M. Valenciennes, will, we feel sure, be

thought decisive by the great majority of naturalists interested in either the *zoological* or *geological* relations of this remarkable fos il.

MINERALOGY.

10. Substitute for Emery.—Topaz, the discovery of which in this country was first announced in *Silliman's American Journal*, many years since, has continued to occur in such abundance (although not *in general* beautiful), that the owner of the locality has been induced to crush it to powder as a substitute for emery. The hardness of the Topaz is such (8) as to place it next to Corundum (9), with the exception of Spinella, Automolite, and Chrysoberyl, which approach nearer to Corundum than Topaz; but they have never been found in the quantity that the latter occurs in Monroe. We understand that those who have made use of this substitute find, that for all common purposes it answers very well.

11. Bog Earth a Substitute for Coal.—Monsieur Orguesson, a Swede by birth, and proprietor of immense portions of land in the neighbourhood of Helsingfors, in Finland, has invented an apparatus by means of which he renders bog earth as hard and compact as Coal. In this state it easily takes fire, gives a pure and brilliant flame, and produces as much heat, if not more, than Coal.

METEOROLOGY.

12. Vegetable Weather-prophet.—The attention of scientific men is just now directed to a curious discovery of Prof. Stiefel—well known throughout Germany for his researches in Natural Science—the result of which has been the attainment of a more accurate knowledge of those changes to which the atmosphere is subjected, than was possible by the old method. The instruments hitherto in use have been the thermometer and the barometer, but an unerring standard has been considered a desideratum; that is said to have been at last supplied in the shape of Geranium-fruit, the awns of which are *in* and *e*volved by the dryness or humidity of the atmosphere, in obedience to laws so regular and unvarying, that being fixed upon a dial-plate properly graduated, the change from one part of a room to another may be noted with the greatest accuracy. A paper on the subject was to be read at the meeting of German naturalists, held this year at Freyburg. Prof. Stiefel is the greatest weather-doctor in southern Germany, and has, for many years, tabulated all changes in the atmosphere, according to a plan suggested by Goethe; but he does not venture to predict for more than twenty-four hours at a time, and laughs at our weather-prophets. By observation, he says, one may get the *rule*, but not the *exceptions*.—*Athenæum*.

REVIEWS OF NEW PUBLICATIONS.

The Economy of a Coal-field; an Exposition of the Objects of the Geological and Polytechnic Society of the West-Riding of Yorkshire, and of the best Means of attaining them. By Jas. F. W. Johnston, M.A., F.R.SS.L. & E., F.G.S., &c. &c. &c. Durham: *Andrews.* 1838. 8vo. pp. 78.

Excellently and faithfully does this lecture—delivered at the Wakefield Society in May last—perform the promise held out in the title-page. It contains a mass of facts and opinions interesting to every individual pursuing that line of study which leads us to contemplate Nature in the bowels of the earth. The counsel and information conveyed in its pages—though necessarily of peculiar value to the geologists of the West-Riding—would prove of no slight advantage to other youthful Institutions having a similar object in view. Such being the case, we cannot marvel at the desire expressed by the Wakefield Society, that the lecture should be printed; but the importance of the subject induces us to inquire why it has not been *published?* We conclude the pamphlet may at least be had at Wakefield, but elsewhere it can have but few or no purchasers. Those who are connected with the public press have good reason to be fully acquainted with the difficulty of obtaining an obnoxious work, even when it is published in London or Edinburgh; and in the case of country-published books, of course the metropolitan trade cannot be expected even to be aware of their existence, when ordered by their country correspondents. We have thought it right to mention these circumstances, for the benefit of those who may in future wish to address the public through the medium of the press. It can never be amiss, even in the case of a purely local pamphlet, to place the name of a metropolitan publisher on the title-page, and it will generally be found that several copies will thereby be disposed of. Even in the present instance, the name of a London or Edinburgh wholesale bookseller might easily be added without printing a fresh title-page.

The rules of the Society which gave birth to Mr. Johnston's pamphlet will be found in our Vol. III., p. 145.

Seven Weeks in Belgium, Switzerland, Lombardy, Piedmont, Savoy, &c. &c. By John Roby, Esq., M.R.S.L., author of *Traditions of Lancashire*, &c. &c With a Map, and numerous Wood-cuts from the Author's Sketches. In 2 vols. 8vo. pp. 420 & 424. London: *Longman and Co.* 1838.

This work will be interesting to our botanical readers, on account of the localities of the plants of most of the places visited by our author being

enumerated. Nor is Mr. Roby silent respecting Zoology and Geology, where opportunity serves. We should be glad to see such details more frequent in books and tours, since it would betoken an increased "popularity" of Natural Science. Still more cheerfully should we welcome the results of those who had travelled in foreign parts with the express view of informing themselves and the world regarding the animal, vegetable, and mineral productions of distant climes.

The nature of Mr. Roby's tour, and of *The Naturalist*, scarcely sanction an extended review, but a few comments may be admissible. At p. 12 our author alludes to "the dull daily realities of this stupid, monotonous, disgusting world." Now we do not consider this sentiment either very cheering or very poetical; and we cannot but suspect that those who use such language are either not in earnest, or else that they are little gifted with intellectual power. Those whose minds are the most perfectly developed never complain that their Almighty God of Love has created a "dull, stupid, monotonous, disgusting world." Place an illiterate boor in a magnificent library, give him the range of a splendid picture-gallery, or introduce him to the sublime harmony of a cathedral or Catholic chapel, and the chances are in favour of his exclaiming against the infliction. Even so it is in the wide world. Outward Nature is lovely, and each individual object, animate or inanimate, is replete with interest, where the mind is capable of perceiving "good in every thing."

At Ostend our tourist was kept awake in early morning by the cocks, these "pestilent brutes" (p. 47) having maliciously determined on crowing in a minor key. We have frequently heard this minor cadenza in England, but such circumstances are scarce worth noticing in our own country.

The principal streets in Ghent are stated (p. 74) to be paved with blocks of Granite, which our author believes to be obtained from Aberdeen; but probably Mr. Roby was too deeply smitten with the dullness, stupidity, monotony, &c. &c., of this "vale of tears" to condescend to favour us with so cold and common-place an article as a reason for his opinion.

At p. 79 Mr. Roby proves his ignorance of Phrenology by supposing that the association of bales of merchandise with a fine place can "rouse the bump of Ideality into action;" and the day has at length dawned when a wilful ignorance of the true science of mind will no longer prove a recommendation, or be considered a mark of superior discrimination.

The lofty spire of Antwerp cathedral "is not like a thing of earth, but a creation!—a shape, not of gross and palpable matter, made up of stone piled upon stone, by incessant and long-continued labour; but struck forth, called into existence, by some superior intelligence, some genii gifted with powers and faculties far above what are possessed by these plodding, wriggling atoms that from its summit are like the insects that swarm in the sun, or the motes in his

beam." (p. 82.) In the above fanciful passage, Mr. Roby admits (probably unintentionally) that "gross and palpable matter" *can* resemble the creation of some "genii," ghost, devil, or whatever other supernatural being may have been uppermost in his mind at the time. The cathedral of Antwerp appears to have taught him this fact. At the same time he forgets (qu., denies?) that "gross and palpable matter" is fashioned, if not created, by that God whose noble works find so small favour in his critical eyes.

Although Mr. Roby appears to have had his mind alive to the subjects of ordinary interest to travellers and readers of travels, as well as to some points not so generally entering into the scope of such individuals, it grieves us to find, running through his pages, a vein of something very like illiberality, similar to the few passages we have noticed in the early portion of the first volume. He lacks not benevolence or love of accuracy; but at times his imagination appears to overrule his reasoning faculties.

Be it understood, that we have alluded to the faults of this book in no spirit of ill-will, but rather because we regret to find them marring a work otherwise interesting and instructive, more especially to those who intend to traverse a similar tract of country.

Mr. Roby's name has been immortalised by Sir Walter Scott. Many of our readers will recognise him as the author of *Traditions of Lancashire*, and all will remember with pleasure the report of his botanical lectures at Rochdale, in our last number (p. 100). His volumes are inscribed to Lord Francis Egerton, M.P.

A History of British Birds. By William Yarrell, F.L.S., V.-P.Z.S. Illustrated by a Wood-cut of each Species, and numerous Vignettes. London: *John Van Voorst*, 1, Paternoster-Row. Part ix. Nov. 1, 1838. 8vo. pp. 26.

The November number contains the Pipits, Larks, and Buntings, or, as Mr. Yarrell—adopting small families—expresses it, *Anthidæ*, *Alaudidæ*, and *Emberizidæ*. We are sorry that these family names have been applied to groups previously characterised as sub-families. We are inclined to question whether any sufficient reason can be adduced for the change, which must beget confusion in the mind of the student.

Without undervaluing the admirable treatises of the late Col. Montagu, Prideaux John Selby, Esq., Mr. MacGillivray, the Rev. Leonard Jenyns, &c., on the same subject, it cannot be denied that this is the most complete work on British birds hitherto published. It may perhaps be cause for regret that its issue is not monthly.

We notice a considerable improvement in nearly all the illustrations in this

ninth part. It gives us pleasure to learn that Mr. YARRELL's excellent work enjoys an extensive circulation. We could wish all our ornithological readers to add it to their libraries.

A General Outline of the Animal Kingdom. By THOMAS RYMER JONES, F.Z.S., Prof. of Comp. Anat. in King's College, London. Illustrated by numerous Engravings on Wood. London: *John Van Voorst.* Parts i. & ii. Sept. & Oct., 1838. 8vo. pp. 96.

WHATEVER progress this country may have made in other branches of science during the last fifty years, it is certain that we are very much behind our continental neighbours in the philosophical study of Natural History. We speak of Natural History as including more particularly the study of the animal and vegetable kingdoms in their structure and functions, and the relations the objects in these kingdoms have to each other. This may be attributed to two causes. In the first place, little or no attention has been given to these subjects in our English Universities; and, in the second place, they have not till lately formed part of the education of those embracing the medical profession. Besides these we may mention the general neglect of a systematic study of Natural History in all our schools. How different is the case in Germany, where the elements of Zoology, Botany, and Mineralogy are taught in all their gymnasia, and a class of Natural History exists in all their numerous colleges. We hope, however, the time has arrived when we shall no longer sustain the reproach of ignorance of any department of science, and that we shall be able to appreciate the discoveries of scientific foreigners, as well as to detect any errors into which they may have fallen. Our reasons for anticipating this change may be seen in the increased attention that is given to Natural History in our old Universities, as well as the prominent part that it occupies in the requirements for the diplomas of the New London University; also in the increased attention paid to the sciences of Comparative Anatomy and Botany by the rising members of the medical profession. It is to the former science that naturalists must look, not only for a correct knowledge of the functions and instincts of the objects in the animal kingdom, but also for a true basis on which to erect their various systems of classification. This fact has not been sufficiently recognised by naturalists in this country; and whilst our neighbours on the Continent have been expanding their views by a close attention to the structure and functions of not only the animal but also the vegetable kingdom, we have, with few exceptions, been contented to add a few new species to the catalogues of natural objects.

This will account for our want of books on the subject of Comparative

Anatomy. Till the time of the publication of Dr. GRANT's lectures in *The Lancet*, in 1833–4, we are not aware that any work existed in the English language professing to give a complete sketch of existing knowledge on Comparative Anatomy. Dr. FIFE's meagre compendium, and the isolated remarks of Sir EVERARD HOME in his lectures, being the only works that could be referred to by the student. Since then, however, GRIFFITH's translation of CUVIER's *Règne Animal* has been finished, and Dr. GRANT has published, or rather is publishing, *Outlines of Comparative Anatomy;* and we have now before us the first two parts of Prof. JONES's *Outlines of the Animal Kingdom*. We were pleased at the announcement of this publication; for although the works above mentioned contain an immense mass of information on the subjects of which they treat, the former is too expensive for general diffusion, and the latter is written in too technical a style for the bulk of students of Natural History. We trust neither of these will be objections to Mr. JONES's book.

Mr. JONES commences his volume with some remarks on classification, giving a short history of the subject, and the views of the principal systematists up to the present day. In this slight sketch he alludes to his own countryman, JOHN HUNTER, whose labours as a comparative-anatomist are unequalled, and whose merits, from peculiar circumstances, have been too little known, even among his own countrymen.

ARISTOTLE and LINNÆUS founded their classifications upon the circulatory system. HUNTER gave sketches of arrangements founded upon other systems than that of the circulatory, and in those arrangements which he founded upon his researches in the nervous system he closely approached the principles of the most approved classification of the present day. The importance of making the nervous system the basis of all classification of the animal kingdom, not only in its larger divisions, but in its minor sub-divisions, is daily becoming more recognised by naturalists; and we fully agree with the author's observations (p. 5) on this point. The aim of classification should undoubtedly be to bring together those objects in Nature which most nearly resemble each other; and these resemblances should not be founded on adventitious and changeful properties, but on those that are the most important. Observing, then, that the nervous system is the seat of those peculiar properties which distinguish animals from organic beings, we might infer, as an animal could not maintain its peculiarity without this system, that here we should find the surest basis for a classification of the animal kingdom. The following is a sketch of the arrangement adopted by Mr. JONES:—

Division I., ACRITA (MACLEAY), *Cryptoneura* (RUDOLPHI), *Protozoa*, *Oozoa*.

1. Sponges
2. Polyps.
3. Polygastric Animalcules.
4. Acalephæ.
5. Parenchymatous Entozoa, or *Sterelmintha*.

Division II., Nematoneura (Owen).

1. *Bryozoa.*
2. *Rotifera.*
3. *Epizoa.*
4. Cavitary *Entozoa*, or *Cœlelmintha.*
5. *Echinodermata.*

Division III., Homogangliata (Owen), *Articulata* (Cuv.), *Annulosa* (MacLeay), *Diploneura* (Grant).

1. *Cirrhipeda.*
2. *Annelida.*
3. *Myriapoda.*
4. *Insecta.*
5. *Arachnida.*
6. *Crustacea.*

Division IV., Heterogangliata (Owen), *Mollusca* (Cuvier), *Cyclogangliata* (Grant).

1. *Tunicata.*
2. *Conchifera.*
3. *Brachiopoda.*
4. *Gasteropoda.*
5. *Pteropoda.*
5. *Cephalopoda.*

Division V., Vertebrata (Cuvier), *Myelencephala* (Owen), *Spiccicerebrata* (Grant).

1. *Fishes.*
2. *Amphibia.*
3. *Reptiles.*
4. *Birds.*
5. *Mammalia.*

In commencing his description of the animal kingdom our author endeavours to settle the question, "What is an animal?" But he rather singularly constructs a definition to which his first group of animals is an exception; he says:—

"The best description of an animal, as distinguished from a vegetable, which has yet been given, is, that whereas the latter, fixed in the soil by roots, or immersed perpetually in the fluid from which it derives its nourishment, absorbs by its whole surface the nutriment which it requires; the animal, being in a greater or less degree capable of changing its position, is provided with an internal receptacle for food, or stomachal cavity, from which, after undergoing the process of digestion, the nutritious matter is taken up. But in the case of the Sponge no such reservoir is found; and in its place we find only anastomosing canals, which permeate the whole body, and convey the circumambient medium to all parts of the porous mass."—p. 13.

We think a better definition would be that a vegetable is a being deriving nourishment by absorption from an external medium in which it is placed, whilst an animal is a being deriving nourishment from a medium that is previously introduced into its system. A simple definition will not, however, in all cases enable us to distinguish the objects of one kingdom from those of the other; and an aggregate of the structure and functions in the lower tribes of beings can alone enable us to draw a correct conclusion. The Sponges (*Poriferæ*) were at one time supposed to belong to the vegetable kingdom; but are now generally admitted amongst animals. An interesting account of their reproduction is given by our author, for which, and in fact for nearly all our knowledge of the functions of *Poriferæ*, we are indebted to Prof. Grant.

The next class of animals considered are the *Polyps*, the principal forms of which are minutely described in an interesting manner. Mr. Jones, we find, adopts the views of Schweigger on the nature of Corallines, looking upon them as members of the vegetable kingdom, and rejecting them from the animal

series. The Corallines still are admitted in most of our zoological classifications, and we wish our author had entered a little into the detail of the reasons that have led him to adopt the views of the German anatomist.

The history of the Polyps is commenced with the description of the *Fungia Agariciformis*, representing, according to Prof. JONES, the simplest form of this class. The gelatinous simple form of these animals is next considered, and a minute account given of the structure, functions, and mode of reproduction of the fresh-water Polyps (*Hydræ*). They abound in the pools and clear streams of our own country. They are simply bags possessing tentacules for the prehension of food. They may be reproduced in two ways. The ordinary mode is by the sprouting of buds or gems, which in process of time leave the parent, and become perfect animals. Their fecundity is very great, and it is calculated that more than a million might be produced in a month by a single Polyp.

The next form of these animals is the compound Cortical, which may be looked upon as a combination of the two preceding. The simple Polyps of the Hydræ being placed on the gelatinous surface of the *Fungia*. This family is divided by CUVIER into three sub-families:—*Keratophytes*, or those having a horny axis, including the Coral and Gorgonia; *Lithophytes*, possessing a hard calcareous axis. These are the most numerous, forming the extensive genera of *Madrepora*; and lastly *Swimmers*, or those having a stony axis, but not fixed, including *Pennatula* and *Alcyonium*. The Lithophytes comprehend those species which exist in so large numbers at the bottom of the sea, and are supposed to have assisted in forming numbers of its islands. The above forms have internal skeletons; but there is a large number, forming the sub-family *Tubularii* of CUVIER, in the family *Coralliferi*, that are remarkable for possessing a higher organisation and an external skeleton. They form the class *Bryozoa* of EHRENBERG, "and have been recently designated by Dr. ARTHUR FARR "Ciliobrachiate Polyps." The peculiar mode of growth of these animals is entered into by our author. They are remarkable for having a visible circulation, which may be seen by means of a good glass, and globules observed moving in different directions. We may observe, however, that the diagram Fig. 14, to illustrate this phenomenon is destitute of the arrows pointing out the direction of the currents.

The next class of animals brought under our notice is the *Polygastrica* of EHRENBERG. We shall not follow our author through the interesting details of the history of these little beings, but proceed to advert to his remarks upon the labours of EHRENBERG, to whom we are chiefly indebted for our knowledge of these animals. It is about eight years since EHRENBERG announced that the vesicles observed in the interior of the Monas and other animalcules where really stomachs. He came to those conclusions by placing the animals in

variously coloured vegetable infusions, when on returning them into clear water, he found that the vesicles were filled with the coloured matter. This colour disappeared again in a little time, and from this he concluded that the matter had acted as the food of the animal, and was digested in the sacs into which it had been introduced. These sacs he asserted are connected by little pedicels to an internal canal, called by him intestinal, which varies in form, but is so constant that Ehrenberg has used it as the basis of his classification of the *Infusoria*.

At the last meeting of the British Association Mr. Jones had an opportunity of stating personally to Prof. Ehrenberg his objections to some of his conclusions.* Prof. Ehrenberg, in a cotemporary Journal, gives an account of this discussion, and after stating the views of Mr. Jones, he supplies his own views on the subject. We cannot pretend to decide which of these anatomists is right; but at the same time it must be confessed, that the number of years Prof. Ehrenberg has devoted to this subject, his high character for accuracy in other departments of science, and his acknowledged skill in the use of the microscope, would lead us at present to adopt his views. It is to be hoped, however, that Prof. Jones will not rest here, but will prosecute his researches still further in this interesting subject.

Our author also differs from the German professor in another point of the economy of these animals. In many of the *Infusoria* a little red speck has been observed similar to the monoculous eyes of many of the entomostracous *Crustacea*, and on this account have been supposed to possess the same function. Mr. Jones would appear to infer that these red spots are indications of the existence of a nervous system; but is not his reason for objecting to them as eyes, as fatal to the supposition that they are a nervous system?

The *Acalephæ* (Sea-nettles) form the next class. They are remarkable for their gelatinous watery nature; a *Medusa* weighing five or six pounds if allowed to drain away will not leave more than so many grains of dry solid matter. Yet their structure and functions are very various. Some are simple plates of gelatinous matter, as are the Jelly-fish of our own coasts; others are supplied with cilia or tentacula, as in Beroe, and the beautiful Girdle of Venus (*Cestus Veneris*); others possess bladders, capable of being filled with air, by which they are floated along; another family has an internal, solid support or skeleton in their body, whilst the *Diphyda* are constructed in such a manner that they look like two animals joined together. Weak and helpless as these animals appear to be, and little as their system would seem to require nourishment from feeding on higher animals, they seize and devour creatures which might seem far

* See *Naturalist*, Vol. IV., p. 91.

too powerful and active for them. Another part of the economy of these animals which is very extraordinary is the power they possess of secreting a large quantity of animal matter, without deriving it from external sources.

We have here a surprising instance of the chemistry of life, exhibited in one of its simplest forms, and we believe that if the physiologist ever wishes to detect the hidden cause of animal secretion, he must investigate it in these simple forms of animated being.

We shall not now follow Mr. JONES through the remaining class that has been treated in the present parts. For the present, we will say that the execution of the work as far as it has appeared is very satisfactory; and cannot but recommend it to those who wish to acquire a knowledge of the structure and functions of the animal kingdom.—E. L.

The India Review; and Journal of Foreign Science and the Arts. Edited by FREDERICK CORBYN, Esq. No. xxv. May 15, 1838. Calcutta: *G. Woollaston*, 8. Esplanade-Row. Royal 8vo. pp. 60.

CONTAINS its usual fund of information, original and selected, judiciously arranged. This month we have (from *Fraser's Magazine*) a plate containing offhand and, we are told, faithful sketches of "a few of the F.S.A.'s," including the president; Mr. JERDAN, Editor of the *Literary Gazette;* Sir CHARLES LEMON, Bart., M.P.; Mr. DAVIES GILBERT; Mr. HENRY HALLAM, F.R.S.; and Mr. D'ISRAELI.

Strictures on Anti-phrenology; in two Letters to MACVEY NAPIER, Esq., and P. M. ROGET, M.D. Printed for Private Distribution. Oct., 1838. pp. 31.

THIS pamphlet professes to be an exposure of the article called "Phrenology," recently published in the *Encyclopædia Britannica.* Its bold and fearless style induces us to ascribe its authorship to our esteemed correspondent Mr. H. C. WATSON, Editor of the *Phrenological Journal;* in the forthcoming number of which, for January, 1839, the letters may be perused.

LITERARY INTELLIGENCE.

WE understand that Mr. M. H. COWELL, of Faversham, is preparing a Flora of his neighbourhood, and that he will be happy to receive information on the subject from brother botanists. It will be closely printed, demy 8vo., on fine paper.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Anecdote of a Bullfinch.—The sly and retiring habits of the Coalhood (or "Bullfinch") in its native haunts are well known; and a slight provocation will in general cause it to desert its nest before the period of incubation has commenced. We are, however, informed, by our friend and neighbour, W. H. Rudston Read, Esq., of Frickley Hall, that in the early part of June, in the present year, a Bullfinch allowed herself to be caressed while sitting on her young ones, and would feed from the hand without the least fear. The nest was in a Laurel-bush, close to the house. It was unfortunately robbed by some biped or quadruped bird-nester, on the 9th of June, the very day on which we visited the spot with the intention of paying our respects to little Bully.—Ed.

Desiderata in Mr. Salmon's Oological Cabinets.—[Mr. Salmon has transmitted to us the following list of his desiderata as regards the eggs of British birds, stating, at the same time, that he will be happy to receive them in exchange for such of his duplicates as may be wanting in other collections.—Ed.] *Pandion haliætus*, *Falco Islandicus*, *F. peregrinus*, *F. palumbarius*, *Pernis apivorus*, *Bubo maximus*, *Scops Aldrovandi*, *Otus vulgaris*, *O. brachyotus*, *Noctua Tengmalmi*, *Merops apiaster*, *Coracias garrula*, *Accentor Alpinus*, *Melizophilus provincialis*, *Regulus ignicapillus*, *Parus cristatus*, *Loxia curvirostra*, *Picus major*, *P. minor*, *Coccyzus Americanus*, *Columba livia*, *Otis tetrax*, *Numenius phæopus*, *Totanus glareola*, *Scolopax rusticola*, *S. major*, *Phalaropus lobatus*, *Crex Baillonii*, *Charadrius Cantianus*, *C. morinellus*, *C. minor*, *Anser palustris*, *A. ferus*, *Cygnus ferus*, *C. Bewickii*, *Mareca Penelope*, *Somateria spectabilis*, *Fuligula ferina*, *F. cristata*, *Clangula vulgaris*, *Mergus merganser*, *Podiceps rubricollis*, *P. auritus*, *Colymbus Arcticus*, *Alca impennis*, *Larus glaucus*.—J. D. Salmon, *Godalming*, *Surrey*, *July* 26, 1838.

The Common Starling (*Sturnus vulgaris*) migratory to a certain Extent.—In the autumn of 1834 a vast number of Starlings were taken up in an exhausted state near Scarborough Castle, where the fishermen usually dry their nets. Some idea may be formed of their numbers, when it is stated that almost every boy at the lower end of the town had caught and destroyed many of them. Does not this fact render it probable that the Starling is in some degree migratory?—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.

Flight of "little Owls" in Yorkshire.—Mr. Rudston Read informs us that, some time since, from twenty to thirty "little Owls" were seen in a Gorse-

cover belonging to P. Davies Cooke, Esq., of Owston Hall, near Doncaster. Mr. Read's informant was well acquainted with all the common British species of Owl, but stated positively that the Owston birds belonged to none of these. Unfortunately none of these "little Owls" were preserved.—Ed.

Elenchus Templetonii.—On plate 17 of the *Transactions of the Entomological Society*, Mr. Westwood has figured *Elenchus Templetonii*, taken in the island of Mauritius, by R. Templeton, Esq., confirming Mr. Curtis's opinion of the value of *his* genus (though the word *Elenchus* occurs in White's *Selborne*, Vol. I., p. 233), but seems to hint that his specific name, *Walkeri*, must give way to *tenuicornis*. Mr. Stephens must likewise have something to say on this head, viz., that he took a specimen of *E. tenuicornis* (qu., *E. Walkeri?*) whilst *sweeping Thistles*, &c., near Hertford. "It moved its pseudelytra with great rapidity." "The abdomen, when *alive*, is *long*"; and "this part of the body, when alive, is *twisted* about similarly to that of a *Staphylinus*." Compare his account with mine in Curtis's *British Entomology*, plate 227!—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

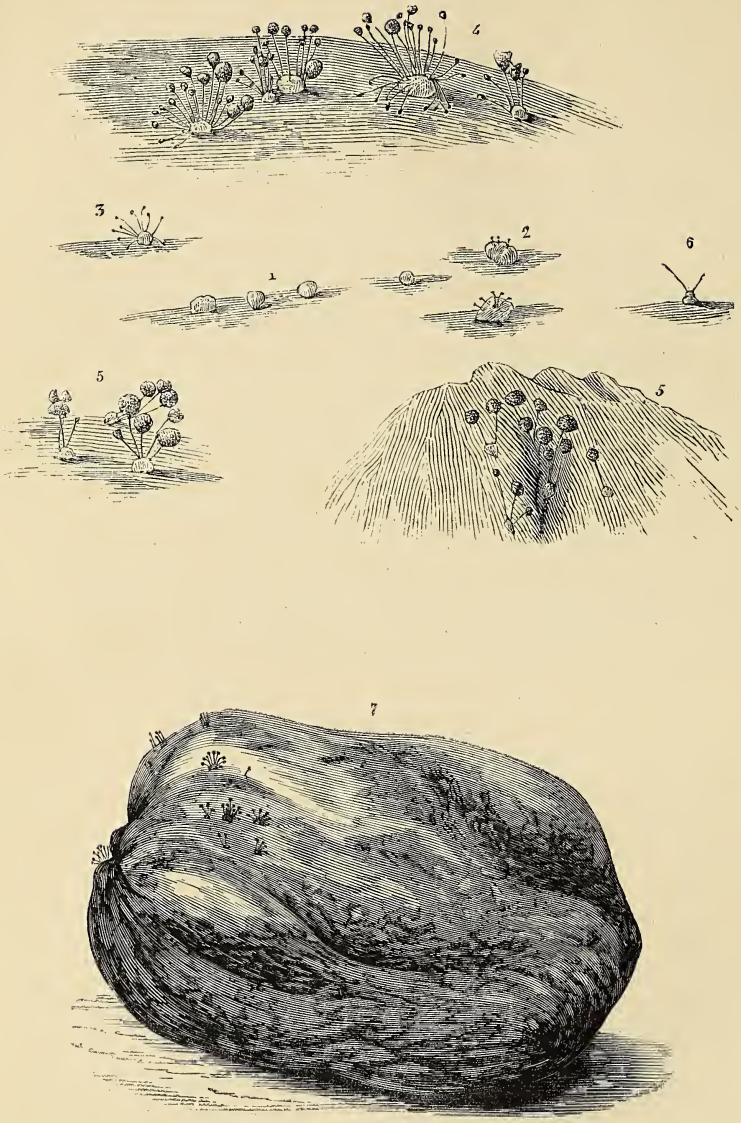
Goethe's Collection in Natural History, &c.—A letter of the 2nd Inst. from Weimar says, that in the house formerly occupied by Goethe, and which belonged to him, still exist, precisely in the same state left by him at his death, his bed-chamber, his study, his library, and his rich collection of objects of Natural History, antiquities, coins and metals, works of art, &c., which are visited by all strangers of distinction, and which were lately inspected in all their details by the Emperor and Empress of Russia. The Governor of Weimar is said to be negociating with Goethe's heirs for the purchase of all these objects, and the house which contains them, for the purpose of forming a national museum, which is to bear the name of the illustrious deceased. The collections are estimated at the value of 80,000 thalers, or rather more than £11,400.—*Spectator, Oct.* 13, 1838.

Natural History and the Medical Profession.—The nonprofessional subscribers to the *Naturalist's Library* must be imbued with the highest estimation of the medical profession, for scarcely can there be opened any volume of the series without disclosing evidence of the debt which Natural Science owes to men who have been educated for the healing art. In a former notice we placed in prominent view the fact that even Bruce was wholly indebted for his opportunities as a traveller to instruction which he had obtained in Medicine. The facts formed a striking and valuable tribute to the highest of the arts. In perusing the history of Natural Science, the great majority of its contributors appear to have been disciples of that art. Each volume of the *Naturalist's Library* is prefaced by a memorandum of some distinguished discoverer, chosen with no partiality, but for the greatest among his class, and as one result we find

that without many exceptions the biographies are those of disciples of Medicine. It is true that in some instances the philosopher has ultimately retreated from the paths of the one science to the more attractive field of another; but the inclination, the education, and the earlier pursuits of life have belonged to Medicine, and the habits engendered by a medical education, and its fostering care of the mind and intellect during youth, have been causes of the subsequent career and great discoveries of the man.—*Lancet, Oct.* 27, 1838.—[The great number of eminent naturalists who have been members of the medical faculty has long been a subject of remark with us. We may mention some of the names which occur to us, from an early period up to the present day:—Conrad Gesner, M.D.; Pierre Belon; H. Salviani; G. Rondelet, M.D.; U. Aldrovandi, M.D.; John Johnston, M.D.; F. Redi, M.D.; J. Swammerdam, M.D.; Sir Hans Sloane, Bart., M.D.; Sir Charles Linnæus, M.D.; J. M. Bechstein, M.D.; M. E. Bloch, M.D.; J. F. Blumenbach; C. Duméril; John Latham, M.D.; W. E. Leach, M.D.; Martin Lister, M.D.; G. W. F. Panzer; George Shaw, M.D.; Sir J. E. Smith, M.D.; T. Horsfield, M.D.; Dr. Graham; Dr. Greville; J. L. Drummond, M.D.; R. Parnell, M.D.; Edward Bevan, M.D.; Prof. Grant, M.D.; Gideon A. Mantell, LL.D., Surgeon; &c. &c. The above is by no means intended as a complete list; but it will amply support the opinion that Natural History is deeply indebted to the medical profession.—Ed. *Nat.*]

GEOLOGY.

Interesting Discovery in the Phœnix Park, Dublin.—An ancient tumulus, traditionally known by the name of *Cnoc Math Righ*, or the hill of the Good King, has been opened in the Phœnix Park. The first object uncovered by the workmen was a perfect cromlech, or altar tomb, deep within the centre of the mound, consisting of a rough unchiselled incumbent slab, six feet and a half in length by three feet and a half in breadth, resting on five pillar stones, three feet and a half high each, two at either side and one at the foot, the whole forming a small chamber within; and the openings further secured by additional flagstones, making the enclosure perfect; whilst covering the whole structure, above and around it, was a considerable collection of rubble or field stones. On opening the small chamber, two human skeletons were found in high preservation, in such a position as seem to have been buried in a sitting posture; one of these was pronounced to be that of a male, the other of a female, the latter being also of a lesser stature. Besides them were found portions of two earthen urns, evidently of a remote antiquity, and a quantity of small white Periwinkle shells, the points or extremities removed, so as to form holes by which they could be strung together, and thus form an ornament for the neck, doubtless, of the female.—*Irish paper.*



1. Common point, grey or white; 2. The same, with the dark points beginning to appear; 3. A more advanced stage, showing the extension of the above into white or grey hairlike stipes, supporting the dilated terminating cell; 4 & 5. The preceding matured; 6. The stalks with the collapsed peridiole; 7. Fruit of the Thebaic Palm, natural size, with parasitic Fungi. Figs. 1 to 6 are magnified.

THE NATURALIST.

VOL. IV., NO. XXVIII.—JANUARY, 1839.

ON A NEW PARASITIC PLANT (*Mucor hyphœnes*, Berk.) FOUND GROWING ON THE FRUIT OF THE DOUM OR THEBAIC PALM (*Cucifera Thebaica*), IN UPPER EGYPT.*

By William Hibbert, M.D.,

Assistant Surgeon to the Queen's Royals.

In the following pages I propose introducing to the notice of your readers a small plant which I accidentally detected growing upon the fruit of the Thebaic Palm, and evidently belonging to the last class of the Linnæan system, the Cryptogamic.

The tree which bears this fruit will here only need a very brief notice, as the accurate description of M. Delisle is to be found in most elementary works.

Upon the Nile it makes its first appearance about Girgeh, and throughout the country is much prized, although perhaps not to such a degree as the above author seems to consider. It is regarded as secondary, compared with the Date-tree, which is equally, or even more plentiful in the same situations. It is similar in structure and uses to the other Palms. The kernel is greatly relished by the natives, hard, gristly, and insipid as it is, and the nut itself bears a considerable resemblance, externally, to the Coco-nut; never, however, equalling it in size, the average being three inches by two and a half, growing in clusters, and, like the above, double. The wood, which in its growth differs from that of most other Palms, in branching and always possessing dichotomous stems, as well as in the leaves, which somewhat resemble those of the Palmyra, an East-Indian species, and are used by the natives for most domestic purposes. The former, however, never attains the height of that of the Coco-nut tree. The tree could altogether be much more easily dispensed with than the Date, which in Upper Egypt yields one of the staple productions of food of the country.

Now upon the nut of the Thebaic Palm, and apparently confined to the stomata, vegetates the parasitic Fungus about to be described. It commences

* Transmitted from Bombay through the kindness of Sir James MacGrigor, Bart., M.D.; and communicated to this Journal by Dr. Lindley, F.R.S., Professor of Botany in the University of London.—Ed.

by a loose white substance, upon which black spots gradually make their appearance, without, however, deriving any covering from the cuticle; these being elevated upon an unjointed stipe, in the form of a cylindrical capitulum, and covered by an adventitious tissue, probably from the receptacle, slowly enlarge, burst, and shed their soot-black sporidia, to take root elsewhere, only waiting for the presence of a fit soil on which to alight and grow, leaving the stalks and collapsed peridiola remaining.

In the accompanying sketches, the lowest (Fig. 7) shows the natural size of the fruit, with the plants *in situ*. The upper (Figs. 1 to 6) are magnified views of the same Fungi, in various stages of their growth, with the references underneath the plate.

That this parasitic plant belongs to the class *Cryptogamia*, can scarcely be doubted, since it partakes of the characters of the *Mucedineæ* and *Mucorineæ*, with the former by the loose and evanescent texture of the flocci of the receptacle, with which, in the early stage, the sporangia are covered, and with the latter by the terminal cellules and filaments dilating so as to form peridiola, which are simple and free, and contain the sporidia within them, when mature to burst through and be dispersed.

The latter section, however, although it answers neither to the *Acremoniaceæ*, *Stilbiaceæ*, nor *Mucoraceæ*, is on the whole the most likely, and may without hesitation be made to include it.

Hypodermii are out of the question, because they have the sporidia unconnected by any common receptacle, and because these parts are naked; consequently, although some of the physical qualities are similar, we cannot classify it with *Spilocæ*, so common upon fruit in our own temperate climate.

The origin of all these parasites can be distinctly traced to the stomata, where probably they take root from the moisture exuding thence, as in some which I possess, and which were previously well dried in the sun, no such growth took place; nor have they yet commenced, although in precisely similar situations with others which still continue to vegetate.

Meagre as are the details hitherto collected, we yet know sufficient upon this point to prove that most of the tropical Fungi at least differ from the European species. Some indeed are identical; but the majority are specifically distinct. At all events this appears to be the case as far as we are aware; for so little have they hitherto been studied in these regions, and so scarce are they near the Equator, that the subject is involved in no small obscurity.

Bombay, June, 1837.

Observations on the Mould above described, in a Letter to the Editor, by the Rev. M. J. Berkeley, M.A., F.L.S.

Sir,—I have great pleasure in replying to your communication. I regret that I am not able to do so as satisfactorily as I could wish, in consequence of there being no specimens; but the drawing is so nicely executed, that, even in the absence of any analysis, I venture to pronounce the production new, and a species of the genus *Mucor*. Perhaps at some future time you may be able to procure specimens, and if so I should feel greatly obliged by an inspection of them. The circumstance of its growing from the stomata is interesting, and perhaps throws light upon an anomalous and probably allied species (*Mucor nigrescens*, Schum.), which forms determinate spots on the living leaves of *Rhamnus frangula*. *Botrytis parasitica* appears to be produced constantly from the stomata; and from Unger's observations on Hypodermous Fungi, it would seem, that they are generally found in the same situation, and in fact are not produced at all in plants destitute of an epidermis. This was shown to be the case in *Puccinia Graminis* many years since, by Bauer, in his *Analysis of the Blight in Corn*. The juices with which the stomata in certain conditions of the plant are gorged, afford a fit matrix for the development of Fungi, exactly as does the honey-dew for *Fumago foliorum*, which is merely a state of *Cladosporium herbarum;* or the sap flowing from a wounded Vine for the mycelia, which led to Dutrochet's important paper on the development of *Mucedineæ*. I have myself found a new and very interesting species of *Mucor* during the present summer, on the cut surface of a stem of *Aucuba Japonica*, which had been severely pruned in consequence of injury from the winter's frost. The sap flowed in great abundance, in which appeared an ochre-coloured mass of filaments having altogether the habit of a *Conferva*, but which soon produced a crop of sporangia when removed from the branch, or when the sap flowed less freely.

Your plant may be characterised as follows:—*Mucor hyphænes*, Berk.

Floccis sterilibus niveis pulvinatis determinatis; fertilibus longius culis; sporangiis globosis sporidia nigra copiosissima effundentibus.

Forming minute white pulvinate roundish masses about the stomata of the living fruit of the Doum Palm in Ægypt. Fertile threads rather few, many times higher than the mycelium. Sporangia globose; sporidia black, very copious, loosely attached to the heads when discharged, which retain their globular form, but are greatly increased in size.

I am, Sir,

Your obedient servant,

M. J. Berkeley.

King's Cliffe, Northamptonshire, Oct. 9, 1838.

AN OUTLINE OF THE COMPARATIVE STRUCTURE OF THE SKELETONS OF ZOOPHYTES.

By Thomas Wright, M.R.C.S., &c.

Lecturer on Anatomy and Physiology.

It may be proper to premise, that in the following pages the term "zoophyte" is restricted to those natural groups of the *Radiata* of Cuvier comprising the Sponges and Corals; these two classes of the animal series present so many singular characters in common, that it tends to facilitate a knowledge of their structure to regard them as a primitive type of animal organisation. Were it the object of this paper to shew that such is in reality the case, many striking facts might be adduced in support of my opinion, drawn from their internal mechanism alone. This, however, is not a theoretical essay, but an attempt to describe, in popular language, the simplicity, beauty, and design demonstrable in the frame-work of these interesting beings; and as a knowledge of the skeletons of all classes is essential to the true study of Zoology, it occurred to the author that a general outline of the structure of zoophytes might not prove unacceptable to the readers of *The Naturalist*, leaving to those whose leisure, circumstances, and acquirements may enable them, to fill up the numerous details left untouched in the present sketch. Should occasional relaxation from the numerous duties of a laborious profession, enable me at some future time to trace another page of lovely Nature, I shall then enter upon the consideration of the organs of locomotion of Radiated animals.

The *Spongiaria* or *Porifera* are among the lowest forms of animal life. They are composed of an horny frame-work, invested with a simple homogeneous gelatinous tissue, which develops innumerable ciliæ, the action of which is peculiarly adapted to produce currents in the ambient water, and to attract animalcules or other organic atoms that float in every drop of the oceanic waters. The delicate structure of these simple beings is supported on an elastic horny network, which in some genera is consolidated with Silicious, in others with Calcareous spiculæ. These interesting beings remain rooted to rocks at the bottom of the sea, or hang suspended like living stalactites from the vaulted arches of sub-marine caves, or their delicate vegetable forms droop in endless variety from the shelving ledges of rocks exposed to the constant agitation of the restless waters, which brings their microscopic prey within the influence of the eddies produced by their vibratile organs.

The minute anatomy of the skeletons of this class has enabled zoologists to divide it into three orders, the distinguishing characters of which are derived from the nature of the indurating earthy material. The *Halinida* (Χαλις, *Silex*)

are the most inferior group. They abound in the seas of our northern latitudes, and have their Spongy skeleton strengthened with Silicious needle-shaped spiculæ, embedded with exquisite regularity in a glutinous material, to compose fasciculi, which are interwoven into different forms to constitute a network, that traverses the organism, bounds the aquiferous canals, and supports the gelatinous organised tissue of the animal. The form of the spiculæ varies in the different genera; and these, being permanent, afford the best characters for distinguishing the same.

In the second order the skeleton is consolidated with Calcareous spiculæ, which give a whitish colour to the beings comprised in this group; hence they are called *Leuconida* (λευκος, white). They assume a more complex form than the *Halaniæ*, and their skeleton is extremely friable, from the difference in the density of its mineral ingredients. *Grantia compressa* of our coasts is typical of this order; the surface of its white ovate sac-like body is perforated with minute holes for imbibing the water; these are protected with Calcareous spiculæ of different forms; externally they are thick, and bent at one extremity, tapering gradually to a sharp point at the other, whilst the larger inner surface of the pores is surrounded with spiculæ of a tri-radiate form. In *Grantia ciliata* the surface is closely covered with linear pointed spiculæ, whilst in its substance are embedded others of a tri-radiate form. The pores, thus carefully guarded, are the mouths of afferent canals that ramify through the body, and open into eferent channels or vents, through which the fluid that has circulated in the animal is ejected again into the sea.

The members of the third order, *Keratosa* (Κερας, a horn), have their skeletons composed of horny tubular filaments interwoven into a network, and disposed around the pores, and the afferent and eferent canals. The Common Sponge (*Spongia officinalis*) is typical of this order, and affords an interesting example of the complicated mechanism displayed in the skeletons of this class. The innumerable small pores that crowd the surface of this zoophyte lead into tortuous canals that wind and anastomose together throughout the structure of the Sponge, until they open into other channels terminating in the large orifices or vent through which the inhaled water that has circulated in its porous texture issues again into the sea. The *Keratosa* are confined to the warmer regions of the ocean, and the numerous species which this order comprehends attain considerable magnitude. When growing from rocks at the bottom of the shallow translucent Indian seas, they present the appearance of large shrubs adorned with the most beautiful colours. The albuminous material constituting the base of the skeletons of these animals, whether strengthened or not by the deposition of earthy matter, is a secretion due to the vital energies of the enveloping organised gelatinous substance; and like the arborescent stems of *Polypifera*, or the shells of *Mollusca*,

is successively deposited to meet the wants of these simple beings, and is as necessary to the perfection of their organism, as is the internal osseous framework of the higher animals.

In the study of these *Protozoa*, the physiologist discovers the first steps of that process by which Nature commences the construction and consolidation of a frame-work for supporting the soft tissues, by depositing earthy materials throughout an albuminous network; and he discerns a striking analogy between the permanent condition of this process in these simple vegetable-like forms, and the early stages of ossification in the embryos of *Vertebrata*. A knowledge of the minute anatomy of the *Spongiaria* is of importance to the geologist, as it enables him to account for the frequent occurrence of the fossilised remains of extinct species in Flint-nodules, seeing that the Silex contained in their skeleton would act as a centre of attraction, around which Silicious particles would be deposited from solution through the agency of chemical affinity.

The elegant plant-like zoophytes that convert the bed of the ocean into a garden of living forms, adorned with the richest and most varied hues, but for the most part rooted by a Calcareous base to some sub-marine body, constitute the class *Polypifera*. Their organs of support assume an infinite variety of forms; in some the gelatinous substance of the animal is inclosed in ramified, horny, tubular sheaths; in others it develops a lace-work of minute cells spread in retiform expansion over the surface of marine bodies; other zoophytes have a Calcareous axis inclosed in the centre of their fleshy crust; and this branched or globular skeleton develops in general a series of cells for lodging and protecting the *Polypi*.

The most simple condition of the skeleton in this class is observed in *Alcyonidæ;* and the genera which compose this family, *Alcyonium*, *Lobularia*, *Cydonium*, &c., appear to form a passage from *Spongiaria* to the class now under consideration. Their frame-work consists of soft flexible filaments, interwoven to form the boundaries of cells, in which are lodged the numerous *Polypi*. In the true *Keratophytes*,* as *Sertularia*, *Campanularia*, *Antennularia*, and *Plumularia*, the skeleton is in the form of an external, horny, tubular subarticulated plant-like sheath, for enclosing the gelatinous substance, and lodging in delicate cells, arranged with wonderful regularity, on the parent stem, the numerous *Polypi* that are developed from the organized axis, the Sea-pine Coralline (*Sertularia pineaster*), and the Bell-shaped Coralline (*Campanularia dichotoma*), afford familiar and instructive examples of the external characters and internal organisation of the order *Vaginata*. In *Campanularia* the plant-like stem is attached by a spreading root to the surface of shells or other marine bodies; the fleshy

* *Polypifera* with a horny axis: κερας, horn; φυτον, a stem.

substance is seen occupying the interior of the horny sheath, and, traversing like the pith of a tree the ramifications of the Polypary, the branches terminate in campanulate expansions for lodging the Polyps. When viewed in appropriate vessels under water, the habits of these interesting creatures may be satisfactorily studied; the mouth of the Polyp, when in quest of prey, is seen to be provided with numerous tentacula, endowed with the most exquisite sensibility, and rapidly moved in all directions; the gelatinous flesh is composed of minute granules, through which currents of globules are seen meandering slowly up the sides, and returning in an opposite course down the centre. The axillæ of the branches at certain seasons are occupied by ovate deciduous vesicles, which play an important part in the generative process. In these operculated chambers the gemmules bud forth from the parent stem, and undergo the process of development; having arrived at maturity, the opercula drop off, and allow the embryos to escape into the sea. The fleshy pith which occupies the centre of the stem and branches is enclosed, according to Lister,* in two distinct laminæ; the internal layer invelops the general gelatinous flesh, and forms the membranous structure of the nutritive Polyps; the external layer lines the inner surface of the ramified Polypary, and expands with the growth of the organism to form the Polypiferous and ovigerous vesicles. The skeleton is therefore a secretion of indurated albumen, furnished by the tegumentary membrane; and as it shoots upwards, it assumes the form and direction prescribed to the individual species. When a branch in process of growth is examined with the microscope, it is seen to be open at its distal extremity, through which the secreting membrane of the horny sheath protrudes. When it has attained its specific length, the granular flesh of the newly-formed branch becomes gradually more and more dilated at its extremity, and the tegumentary membrane is observed to expand, and deposit corneous matter, to form a new cell; whilst the vesicle is in process of growth, a concentration of the vital action is going forward in the gelatinous flesh, a septum is first thrown across the bottom of the cell; next an outline of the future Polyp is seen through the diaphanous sheath, which subsequently acquires tentacula, and being thus perfected in all its parts, the newly-formed Polyp rises from its cell, and expands its little arms in quest of nourishment to contribute its part to the nutrition of the Polypary of which it constitutes an integral part.

The delicate lace-work of minute cells observed on the surface of *Fusi*, or seen spreading in retiform expansions upon the shells of *Mollusca*, are the cellular skeletons of zoophytes belonging to the order *Retiformia*, of which the Sea Matt (*Flustra carbesia*) affords a familiar example. When obtained fresh from the water, and attentively examined with a moderate magnifying power, the surface

* *Philosophical Transactions.*

is observed to be covered with a series of egg-shaped vesicles, gradually contracted towards their inferior part, and arranged with great regularity. Each cell is the habitation of a Polyp of a very complex organisation, having the mouth surrounded by 22 tentacula, the margins of each of which are provided with 100 minute vibratile ciliæ. It is estimated* that in each square inch there are about 1,800 cells, and ordinary specimens in general contain about ten square inches; so that in this zoophyte there are no less than 18,000 Polypi, armed with 396,000 tentacula, from the margins of which 39,600,000 ciliæ emanate. What an enormous complication in so simple a being!

In the order *Corticifera* the skeleton is internal, and the fleshy crust is moulded around the horny or Calcareous axis. The organ of support affords no solid protection to the Polypi, there being no cells either upon the stem or branches for lodging the same; these solid parts are marked with longitudinal striæ alone, to secure the adhesion of the investing fleshy substance, as is easily seen by peeling the Calcareous crust from the stem of a *Gorgonia*, or by inspecting a branch of recent Coral. The *Gorgonia* and *Antipathes*, so common in all collections, are examples of *Corallidæ* with an internal horny axis. Although the fleshy substance in dried specimens has been dissipated by evaporation, still there remains a Calcareous crust which adheres firmly to the horny stem. This crust is perforated with numerous small pores, and is coloured in the different species with the most lively hues, as yellow, crimson, vermillion, &c. The Calcareous spiculæ composing the bark were component parts of the fleshy substance, and the delicate tints are due to some peculiar colouring material secreted by the organised fleshy portion. These spiculæ are analogous to the earthy materials embedded in the horny network of *Porifera*, and may probably be destined to serve as a compensation for the deficiency of Calcareous matter in the horny stem. When we peel off this porous crust, we expose a dark-coloured horny ramified frame-work, which is the true skeleton; and by making a transverse section of the axis of a *Gorgonia*, we observe that it is composed of concentric rings, which have been successively deposited by the organised gelatinous bark that everywhere invests the horny material. The form of the skeleton in this family varies in the different genera. From the expanded root a compressed angular or cylindrical trunk rises, which divides into numerous branches. These assume a variety of forms, being single, double, or anastomosed, straight, pensile, or pinnate in the different species. In all the diversity of form, colour, and geographical distribution observed in this interesting group, one common character prevails, namely, that the internal horny extravascular axis is enveloped in an organised crust, through which are scattered Calcareous spiculæ, to form the boundaries of cells for lodging

* Grant, *Trans. Zoolog. Soc.*, Vol. I.; Roget's *Bridgwater Treatise*, Vol. I.

the minute Polypi. The transition from *Corallidæ* with a horny to those with a Calcareous axis is observed in the interesting genus *Isis*. In this zoophyte the internal organ of support presents an articulated character, from the alternate segments of the stem and branches being composed of horny and Calcareous matter, in cabinet specimens the dessication of the former gives the skeleton a jointed air. This beautiful provision, which gives a greater range of movements to the zoophyte, and by admitting of extensive flexion in the stem and branches diminishes its liabilities to fracture from the violence of the waves, is secured simply by an arrest of the process of Calcification at definite intervals; or, in other words, the horny parts are uncalcified portions of the general solid axis, and are analogous in their structure and development to the skeletons of *Gorgonia* and *Antipathes*. The study of *Isis* conducts us naturally to *Corticifera*, with a Calcareous skeleton, as in the common Red Coral (*Corrallium rubrum*). This arborescent Polypifer is attached by an extended base to submarine bodies, and grows to about a foot in height, the red-coloured stem is invested by a fleshy crust, in the thickness of which the numerous Polypi that crowd its surface find a secure retreat. These sensitive digestive sacs are furnished with eight foliaceous tentacula, which are seen busily extended in search of prey. The Calcareous skeleton resembles a miniature tree denuded of its foliage, is of a bright vermillion tint, and so dense in texture that it is suscepible of the highest polish. The colour of the Red Coral varies considerably in the intensity and beauty of its dye, according to the depth of water in which it is developed, the colouration depending on the influence of light; it is for this reason that molluscs and zoophytes inhabiting the oceanic bed at considerable depths from the surface are deprived of the delicate and vivid hues that adorn other species of the same genus, placed by the nature of their habits and instincts within the more immediate influence of the solar rays. The *Pennatulidæ* are so called from their general resemblance to a feather. The body is fleshy, more or less cylindrical, and supports an oval-shaped head composed of numerous diverging arms, which have a similar situation and direction to the barbs that spring from the shaft of a feather; each ray arises from the central stem by a distinct root, and supports upon its upper surface numerous cells for lodging the Polypi. These processes increase with the age of the animal; in the specimen before me I can count thirty rays on each side of the stem. They are free, and eminently phosphorescent zoophytes, and swim through the ocean by the movements of their celluliferous arms. This fact I am enabled to state, in contradiction to an opposite opinion maintained by many modern zoologists, from observations made on a fine specimen of Sea-pen (*Pennatula phosphorea*) four inches in length, captured by my wife, on the Scottish coast. This lady, to whose acute observations on natural phenomena I am indebted for many valuable facts, had the good fortune to place the specimen,

when obtained quite active from a net, into a vessel of sea-water, where she had an opportunity of watching for some time its movements. It glided through the water by the alternate elevation and depression of its celluliferous arms, and the slight inflections of its stem. The skeleton consists of a straight diconical style, situated in the centre of the irritable fleshy body. It is soft and flexible at both extremities, to admit of the extensions and contractions which the body performs in the longitudinal direction. In the Sea-rush (*Virgularia mirabilis*), the organ of support consists of a straight white Calcareous cylindrical bone, which when fractured appears to be composed of Calcareous crystals that radiate from the centre like the horny laminæ seen on the broken surface of a *Belemnite*. This solid support occupies the centre of the longitudinal axis of the fleshy body, and projects for some distance beyond its extremity in *Veretillum*. The organ of support is small, ligamentous, and almost rudimentary.

The *Tubiporidæ* constitute an interesting group of vaginated Polyps, with a Calcareous tubular skeleton. They are in the true sense of the term social zoophytes, conjointly forming those beautiful masses of blood-red Coral that decorate with their gorgeous hues the bed of the Indian seas. From the observations of Lamouroux* on the Organ Coral (*Tubipora musica*) the type of this family, it appears they are destitute of that organic union which exists among the compound *Polypifera*. The skeleton of this beautiful genus consists of a series of bright-red alcareous tubes, bound together by transverse septa, so that a colony of these little animals presents the appearance of several stages of crimson-coloured pipes built upon each other, disposed in parallel rows, and radiating from their common attachment, the root. The tubes are placed at considerable distances apart, and retained *in situ* by horizontal laminæ of the same Calcareous material as the tubular portion of their Polypary. Each tube is a distinct skeleton, and is the habitation of a bright green-coloured Polyp, provided with eight foliaceous tentaculæ, disposed in a circle round the mouth. The margins of each of these are furnished with two or three rows of minute fleshy processes, endowed with great sensibility. The animal is attached to its shell by a delicate membrane surrounding the base of the tentacules like a collar, from whence it is reflected outwards to line the inner surface of that portion of the tube inhabited by the Polyp, and to become continuous with its free extremity.

The membrane just described is, therefore, the tube-forming organ, the development of the cylinders being due to the gradual Calcification of that portion of the gelatinous membrane which joins the extremity of the Calcareous tube.

The constant deposition of Calcareous matter at the distal extremity of the tubes causes their gradual elongation upwards, and necessitates a mechanical

* *Anatomie de Tubipore musical*, in Quoy and Gaimard's *Voyage de l'Uraine*.

contrivance to support their fragile structure against the violence of the waves; hence the law impressed on their organism to form lateral supports at certain intervals, which gives rise to the horizontal laminæ that form so singular a feature in the skeletons of this family. When the tube has been developed to a certain height, the Polyp commences the construction of its strengthening plates. This singular piece of masonry is accomplished by the animal expanding the Calcifying membrane to a certain distance outwards, then folding the membrane upon itself, so as to bring the inner surfaces in contact, it returns to its original position, and resumes its tubular form; the membranous septa are soon impregnated with Calcareous particles, and intimately soldered together, to afford the necessary support to the growing edifice.

The regularity observed in the construction of these laminæ shews that they are formed by a simultaneous effort of the Polypi on the same plane. A mechanical advantage is thus gained; for as the margins of the membranes expand outwards, they meet each other, and, thus united, form an uninterrupted floor extending across the entire extent of the Polypary, which serves the purpose of cross beams to bind the columnar structure together in all its parts, thus affording additional security to another story of tubes to be raised upon this newly-formed stage. The Polyp does not occupy the entire tube, but only the last-formed chamber, the ancient portion of the cylinder being partitioned off at various distances by Calcareous septa, like the polythalamous shell of a Nautilus or Ammonite. The true Lithophytes have a massive skeleton composed chiefly of the Carbonate of Lime, with a small portion of the Phosphate, deposited in an albuminous material, and moulded into a variety of forms. The surface of this Calcareous mass develops one or more Polypiferous cells, divided by lamellæ, which emanate from a common centre, and radiate to the circumference. The magnitude and position of the Polyps is therefore indicated by the provision thus made in their skeleton for lodging and protecting these delicate and highly sensitive organs. The form and position of these cavities being permanent in the different genera, they afford the zoologist the best characters for describing and distinguishing the same. Thus they are small and extremely numerous in the *Porita*, more fully developed but less numerous in *Madrepora*, larger and isolated in *Caryophyllea*, where each branch terminates in a deep cell with elevated margins; the globular surface of *Astrea* is studded over with stellate depressions, bounded by defined margins; whilst in *Meandrina* the cells are united by tortuous channels that meander over the surface of these massive Lithophytes; and their vraisemblance to the convolutions of the cerebrum of Mammalia has obtained for this genus their common name, Brainstone. In *Fungia* the entire surface of the large depressed orbicular Polypary is composed of a series of radiating vertical laminæ,

the abode of an isolated gigantic Polyp. The development of the skeletons of Lithophytes is due to the enveloping organised fleshy crust which deposits successive layers of the albumino-calcareous material by which the stony fabric of these simple beings expands in all directions. Like the horny axis of *Gorgoniæ*, or the shells of *Mollusca*, they are altogether extravascular, and consequently inorganic; no interstitial absorption being possible in these massive Calcareous habitations, it is from this law of their economy that the *Polypifera* have played so important a part in the seas of all periods of our planet's history. Their microscopic operations have ever been the same, to crowd their silent waters with myriads of living forms, ornamented with the most beautiful and brilliant hues, and tending by their ever-active carnivorous propensities to keep a vigilant check on the inordinate increase of *Infusoria*, which teem in every drop of the vast abyss, whilst the incessant increase of their Calcareous habitations, which cover almost every rock, sub-marine ridge, and volcanic cone, in tropical seas, tends to build up from the bosom of the deep Calcareous strata many hundreds of miles in extent. It is thus that a knowledge of the organisation and living habits of this class becomes an important and interesting branch of philosophical Geology, and illustrates the intimate connexion which subsists between the physical history of the earth and the myriads of living forms that adorn its varied surface.

The rising of oceans in these latitudes elevates above the waters a living hill of zoophytes, whose enduring skeletons are destined to become the theatre of a new series of phenomena; thus raised above the surface of the water and exposed to the action of the atmosphere, and the washing of the surge, the Coral isle becomes covered with a fertile soil, into which seeds wafted by the winds, or deposited by birds which find, on this new-born rock, a temporary resting-place in their migratory voyage to some far distant land; by these and other agents this infant isle soon becomes clad with a luxuriant vegetation, and this sepulchre of *Polypifera* is thus converted into verdant land, fit for the habitation of Man.

The observations of recent voyagers, as Quoy, Gaimard, Stuchbury, and Darwin, have shewn that the labours of Lithophytes commence only at inconsiderable depths from the surface, and that for the most part recent Madreporic strata are due to the living energies of *Meandrina*, *Astrea*, *Caryophyleia*, and *Madrepora*. This fact affords a striking illustration of the universality of the laws which regulate the development and distribution of animal life; for throughout the entire series of fossiliferous rocks, wherever we discover Coralline strata to such an extent as would justify the inference that they formed part of an ancient Coral-reef, we find, on investigation, that such rocks are almost entirely composed of extinct species of the same genera of zoophytes that at the present

moment are so actively engaged in forming sub-marine strata along the shallow shores of our tropical seas, hereafter to be raised from the bosom of their waters by Nature's dynamics.

Nuneham House, Cheltenham,
Nov. 12, 1838.

ON A GIGANTIC FOSSIL FUCUS DISCOVERED IN THE NEW RED SANDSTONE AT WOODSIDE, ON THE RIVER MERSEY.

By the Rev. Thomas Dwyer, M.A.

This extraordinary fossil was discovered in a stratum of the New Red Sandstone at Woodside, Cheshire, on the West bank of the River Mersey, opposite Liverpool. It is situated on the shore at about high-water mark, and has been brought into view by the weathering of the rock exposed to the action of the sea-water, and other causes. The rock in which the fossil is embedded seems to be the upper portion of a stratum of the New Red Sandstone; it is of a yellowish-white colour, fine-grained, and of moderate hardness. It is free from pebbles. The dip of the rock is a few degrees, not more than six or seven, to the North-East. It is probable that the rock has been little, if at all, disturbed since its deposition; for we know that many strata are now deposited by the sea slightly inclined to the horizon. The stratum in which the fossil is embedded is a portion of the variegated Sandstone, or lower division of the New Red Sandstone formation, corresponding to the *Gres bigarré* of Continental geologists. There can be very little doubt but that the fossil is of marine origin. It is most analogous in its appearance to the *Fuci* of our shores at the present day. It is of considerable thickness, has the same flat ribbon-like shape, and the same irregular mode of growth.

The position of the fossil is similar to the position of a *Fucus* left by the receding tide. Two parts now separate appear to be upper portions of the same plant; and there seems likewise to be a distinct plant, from the lower portions of which a number of shoots or side branches issue. In the central portion of one of the former (*i. e.*, the now separate parts of a once single plant) the side branches have disappeared, in consequence of the rock being much worn away by persons continually passing over it.

The termination of the lower portion of the specimen is abrupt, owing to a sea wall having been built to prevent the encroachments of the tide on the adjacent property.

I am not aware of any other fossil having been met with in this portion of the New Red Sandstone, with the exception of a specimen discovered some years ago by Professor Traill, at the time of the excavation of the Clarence Dock in Liverpool, and by him presented to the museum of the Royal Institution. The fossil here alluded to has been figured and described by Lindley and Hutton in their *Fossil Flora of Great Britain*, plate 135, pp. 135—7.

Liverpool, June 15, 1838.

[We have received a beautiful lithograph of this *Fucus*, but regret that we cannot publish it so as to be of material assistance to the geologist. In the figure we possess the size is greatly reduced, and we should be under the necessity of still further diminishing it.—Ed.]

BOTANICAL NOTES.

Principally from the Herbarium of the Liverpool Botanic Gardens.

By T. B. Hall.

The Alpine Barrenwort, *Epimedium Alpinum*, which is stated by Withering, Smith, and Hooker, in their respective Floras, to grow wild in one station in Yorkshire, as well as on some of the Cumberland mountains, has not, I believe, been found truly wild, if at all, in any of the stations given by those writers. My friend Dr. Dickinson informs me that a namesake of his, an excellent botanist, and one well acquainted with the country, has searched over Skiddaw, Saddleback, and Carrick Fell in vain, having never met with it, nor even been able to hear of any botanist that has. Dr. Dickinson—who has frequently botanized over that ground—has noticed it as being cultivated in gardens at the foot of the fells, and thinks it probable that it may sometimes escape from them. In the herbarium at the Liverpool Botanic Gardens is the following note, attached to this plant by the late Col. Velley, an accurate and discriminating botanist:—"When I was at Keswick this specimen was given to me by Hutton (a collector of Natural History), as a native of those mountainous regions, but I suspect the truth of that assertion, as I explored that country and never saw the least appearance of this specious plant." The Yorkshire locality, "Bingley Woods," is afterwards contradicted in Withering, Vol. II., p. 235, ed. 1830; but it is mentioned in Sir J. E. Smith's *English Flora* and in Professor Hooker's *British Flora* without any comment. Mr. Watson has copied the Yorkshire station into his *New Botanist's Guide* from Turner and Dillwyn, but inserts

an inquiry as to whether it still exists there. Whether the Scotch localities, viz., "About the ruins of Mugdock Castle, near Glasgow, Mr. HOPKIRK," and "At Hunter's Fryste, near Edinburgh, Dr. HASTINGS" (*Fl. Scot.*), rest on any better foundation than the English ones, I cannot say.

Sargassum vulgare, AG. (*Fucus natans*, *Eng. Bot.*)—"This plant," says Col. VELLEY, "has excited much attention in consequence of the notice bestowed upon it by the early navigators, who sometimes experienced great obstruction in their voyages from the astonishing masses in which they found it collected. This species, named by the Spaniards *F. sargasso*, has been mentioned as forming immense meadows on the surface of the ocean; from which circumstance it appears to have been described, though very unphilosophically, as originating without roots or base, and floating at random. LINNÆUS has adopted this error, and having made use of the words '*liberè-nŭtans nec radicatus*,' it should seem that our English botanists had considered this *Fucus* as *fera naturæ*, and made it lawful game, by adopting it as a British plant. It has found its way into almost every collection, and stands at the head of some of our British catalogues. I never met with any person yet who gathered it himself on the rocks or sea-shores of England. I was encamped for several months on the Isle of Sheppey, where it is said to have been found, but never had the good fortune to meet with it, although my researches were very constant. This fine specimen was sent me from Sydney Cove, Botany Bay, with some other curious plants, by Governor PHILLIPS. So far from its not having a base, I found it attached to a small Barnacle, from which I was obliged to break it off." Professor HOOKER observes, in the second volume of his *British Flora*, that it is occasionally cast ashore on the Orkney islands, wafted by the currents, probably from the West Indies, along with other exotic productions. I have frequently had specimens given to me which have been brought home by sailors, and one of my botanical correspondents at Glasgow has sent me a specimen procured in N. Lat. 34°.30', W. Long. 39°.

The English name, "Gulf-weed," originated in the supposition that the masses of this *Fucus* proceeded with the Gulf Stream from the Gulf of Mexico, a supposition which is now proved to be groundless.

The two British Enchanter's-nightshades (*Circæa lutetiana* and *C. Alpina*) seem to be very closely allied to each other, and would almost appear to be connected through *C. intermedia*, which is often as large as *C. lutetiana*, but according to Sir W. HOOKER agrees in its essential characters with *C. Alpina*. There are specimens in the herbarium at the Liverpool Botanic Gardens marked as *Alpina* which ought certainly to be referred to *intermedia* or *lutetiana*; and I have had specimens sent to me from the neighbourhood of Keswick, as *Alpina*, which I could not distinguish from *lutetiana*. The true *Alpina*—an exceedingly delicate and interesting plant—I have had through the kindness of Mr. WATSON,

gathered by Mr. R. Leyland, near Halifax. The specific characters in Sir J. E. Smith's *English Flora* are very badly drawn up, for the shape of the leaves and the serratures afford no distinction. Mr. William Wilson, of Warrington, observes, in the *British Flora*, that "the nectary which surrounds the base of the filaments is more prominent in *lutetiana* than in *Alpina*, and that this circumstance, together with the general absence of bracteas, forms the only specific difference between them."

In the collection of the late Mr. J. Shepherd are some specimens ticketed *C. minor?*, with the following remark appended:—"This plant was found on some mountains near Oldham, called 'Pots and Pans,' about the year 1792, by the Oldham botanist. It was given to me that year. I have grown the plant ever since, and have found very little variation in its growth, although I have grown it in various situations, and think it different from *C. Alpina* of Smith." I have not been able to find any other of this species or variety in any Flora that I have access to, and consider it referable to *C. Alpina*, differing only in being of a still more diminutive habit.

Common Viper's-bugloss, *Echium vulgare*.—The specific character of this plant is not well defined. Dr. Smith, in noticing the stamina, says—"*longitudine fere corollæ*," *Fl. Brit.*, 222. Dr. Withering says,—"stamens much longer than the blossoms," Vol. II., p. 232. Dr. Smith describes a variety (β, Huds.) in which "*stamina longissime exerta*." I do not think much dependence is to be placed on the length of the stamens. They are not regular in the genus *Mentha*, and in the above specimen they exceed the corolla. Gerard's figure is good.—Col. Velley's MS. Notes in Herbarium of the Liverpool Botanic Garden.

Woodside, Cheshire, Nov. 15, 1838.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part XIX.

By Neville Wood, Esq.

White Wagtail,* *Motacilla alba*, Linn.—Bergeronnette grise, *Fr.*—Cuttretola cinerea, *It.*—Weisse Bachstelze, *G.*—A good figure of the male, natural size. "In the early part of the present work we figured the Pied Wagtail, which is a permanent resident in our island, as the true *M. alba* of Linnæus: subsequent experience has, however, convinced us that that the true *M. alba*, a species

* It seems to us a little Irish to designate so dark-coloured a bird as this the "White Wagtail, *M. alba*."

so common in France and Europe, generally, never visits our islands, and it would appear that our bird is almost equally unknown in the temperate portions of the Continent. The question therefore arises as to the species to which it must be referred: we are inclined to believe it quite distinct from *M. lugubris*, and a species inhabiting the Eastern and Southern portions of the Continent, and with which it has by some naturalists been considered as identical; should this ultimately prove to be the case, the English bird will require to be characterized under a new specific designation. The Channel appears in fact to constitute the boundary of these species, as is also the case with *M. neglecta* and *M. flava*. The true *M. alba* differs from our species more in its colouring than in other respects: neither in its full nuptial dress nor at any other period does it exhibit the deep black colouring on the back which is so conspicuous in the British species.

"The White Wagtail frequents meadows, particularly those in the neighbourhood of running streams, also villages, cities, belfries, towers, &c. It is common in Africa and the high lands of India."—Feeds on insects and their larvæ. The nest is built in hollow places, and the eggs, six in number, are bluish white, spotted with black.

Common Shoveller, *Rhynchaspis clypeata*,—Canard souchet, *Fr.*—Anatra mestolone, *It.*—Loffel Ente, *G.*—A male and female are finely given, rather less than the natural size. Ranges throughout the temperate portions of Europe, the North of Africa, and the greater part of India. Mr. Gould suggests that the Summer moult which takes place more especially in marsh birds, and which leaves the male with a duller plumage than at other times, may be for the purpose of "rendering the fostering parent less conspicuous at this critical period." We, however, consider this unlikely, as the males of some species of *Anatidæ* which undergo a Summer moult take no pains whatever to conceal themselves from view during the period of incubation, but rather the contrary. Prefers lakes and inward waters to saline waters, and feeds on larvæ, vegetables, &c. Constructs a nest of coarse herbage "in the central parts of marshes," laying ten or twelve pale green eggs. The female wants the bright tints which distinguish the other sex in Spring and part of Summer.

Marsh Reedling, *Salicaria arundinacea*,—Becfin des-roseaux, *Fr.*—Rhor Sanger, *G.*—A male and female figure on the plate, with too apparent an attempt at effect, and too little realization of it. Inhabits the temperate portions of the Continent; in England we have not traced it further North than Derbyshire. In habits, &c., it closely resembles the Sedge Reedling, but differs in several particulars not mentioned by Mr. Gould, and which, for want of room, we cannot here record.

Natterer's Warbler, *Sylvia Nattereri*,—Becfin Natterer, *Fr.*—A male is represented, but it lacks the freedom of Nature. Common in Algesiras, Provence,

and Swisserland, but is apparently very local. "Temminck informs us that the nests found in Italy were placed on the ground among the Grass, in hilly situations; were of a spherical shape, formed externally of dead leaves, with a lateral opening; and that the eggs are of a globular form, four or five in number, and white minutely dotted with reddish." The tints of the female are less clear than those of the male.

Common Sanderling, *Arenaria calidris*,—Sanderling variable, *Fr.*—Gemeine Sandlaüfer, *G.*—Two birds are very fairly figured, one in Summer the other in Winter plumage, and natural size. Frequents the sea-shores of almost every part of the globe. Breeds in the Northern regions, after which it returns to more temperate climes. The nidification has not been ascertained. Feeds on insects, especially *Coleoptera*, "in the capture of which it displays the greatest agility. Its flight is rapid and vigorous; hence it is enabled to perform considerable migrations in a comparatively short space of time." The changes of plumage which this bird undergoes are so great, that, observes Mr. Gould, "had two examples been presented to us for the first time, one in the plumage of Summer and the other in that of Winter, we should undoubtedly have pronounced them to have been distinct species." The Winter plumage is very considerably more *frosty* than that of Summer, which latter is warm and glowing on the back, each feather being margined with reddish brown.

Tree Pipit, *Anthus arboreus*,—Pipit des-buissons, *Fr.*—Baum Pieper, *G.*—An adult male is figured, but it is somewhat too highly coloured, and not otherwise entirely unexceptionable. It is a Summer visitant with us. Its general habits are well known to most of our ornithological readers; we shall, therefore, content ourselves with observing, as we have elsewhere* done (see our Vol. II., p. 253), and what we are not aware of being noticed by other writers, namely, that, when perched, the Tree Pipit makes a constant but slow wagging of its tail up and down, pointing out, in our opinion, a further relationship of the more arboreal Pipits to the Wagtails.

Ruddy Shieldrake, *Tadorna rutila*,—Canard Kasarka, *Fr.*—Anatra forastiero, *It.*—This is one of the most splendid and ornamental of Mr. Gould's plates which we have yet seen; but we are not sufficiently conversant with the species in its natural state to be enabled to add whether it is amongst the most characteristic. The figure represents an adult male, two-thirds of the natural size. Our author thinks this species would more properly form a new genus,

* One of our correspondents, in reference to the paragraph above referred to in *The Naturalist*, observes that he had long noticed the habit in *caged* individuals; but this is somewhat a lazy method of studying Ornithology, and may moreover in many cases prove absolutely mischievous. On inquiring of our correspondent if he had remarked the circumstance *in the fields*, he very prudently omitted to make any reply!

along with *Anas tadornoïdes*, Jard., of N. S. Wales, and we certainly consider that "it approaches nearer to the true Geese than to the Shieldrakes, inasmuch as it possesses a rounder form of body, stands higher upon the legs, and has a shorter bill, better adapted for grazing or nibbling Grasses or aquatic vegetables, which constitute its principal food." Inhabits the East of Europe, a great portion of Asia, and occurs in Africa. Very rare in England, and not common in any part of Europe. Breeds on the banks of large rivers, "in situations similar to those selected by the Common species, and lays from eight to ten white eggs." Feeds on aquatic vegetables and insects. The female is less brilliant in colour than the male, and wants the black collar round the neck.

Brake Locustell, *Locustella avicula*, Ray,—Becfin locustelle, *Fr.*—Heuschrecken Sangar, *G.*—We are glad to find that our author has adopted the English name "Locustell," first employed in *The Analyst*. The figures, of a male and female, are pretty, but too soft and too highly coloured. Common in many parts of the South of England, but becomes rare in the midland and Northern counties. We have met with it in Yorkshire, and have ascertained that it progresses on the ground by *hopping*, and not by *running*. Inhabits Ireland, Austria, Hungary, Italy, the centre of France, and occurs, but rarely, in Holland. Builds in thick herbage close to the ground, laying four or five pinkish-grey eggs, with numerous specks of a darker hue. The spots on the throat are less distinct in the female than in the male. "Grasshopper Lark," "Grasshopper Warbler," &c., are erroneous names for this bird.

Cinereous Shearwater, *Puffinus cinereus*,—Pétrel puffin, *Fr.*—Two extremely fine figures, rather less than the living dimensions. Our author believes the bird characterised by Mr. Strickland in the *Proceedings of the Zoological Society* to be identical with the present species. In that case three specimens of *P. cinereus* will have been killed within the range of our Fauna. Ranges throughout the Mediterranean. Occurs on the Southern coasts of Spain and Provence, and in Senegal, the Cape of Good Hope, &c. Its habits are similar to those of *P. Anglorum*.

Purple Sandpiper, *Tringa maritima*,—Bécasseau violet, *Fr.*—Rather a pretty figure of an adult, natural size. Occurs on the rocky shores of the North of Europe, Asia, and Africa. Breeds within the Arctic Circle, returning after incubation to more temperate regions. Common on many parts of our coasts, and occasionally breeds with us. Feeds on small *Crustacea*, *Mollusca*, marine plants, &c. "It congregates in small flocks, and has the same wheeling flight which distinguishes the Dunlin, &c." In Summer the plumage becomes much darker than in Winter, and of a more purple hue.

Sky Lark, *Alauda arvensis*,—Alouette des-champs, *Fr.*—Feld Lerche, *G.*—An adult and a young bird are figured, not entirely to our satisfaction. Surely

we shall not be expected to give a minute account of this familiar chorister. It abounds in almost every part of Europe, and in the adjacent portions of Asia and Africa. In Winter they become gregarious, and frequently effect partial migrations in severe seasons, even in England, betaking themselves to more sheltered spots.

Common Cuckoo, *Cuculus canorus*,—Coucou gris, *Fr.*—Cucule cenerino, *It.*—Gemeine Kukuk, *G.*—An adult, and a young bird in the first Autumn, are beautifully represented. Inhabits Europe, and a considerable portion of Asia and Africa. Its habits are fully detailed in almost every treatise on birds, whether scientific or popular. There is, therefore, nothing to detain us here.

Brake Nightingale, *Philomela luscinia*,—Rossignol, *Fr.*—Nachtigall, *G.*—The plate contains a good figure of an adult male. We shall here content ourselves with quoting the following paragraph from Mr. Gould's letter-press:—"So much attention has been lately paid by Mr. Blyth to the migration and localities frequented by this species, that we consider it only our duty to refer our readers to that gentleman's paper on the subject published in the 15th and 16th Nos. of *The Analyst*, which will require but little addition of our own to render the matter clear to every one." Inhabits Europe, especially the South, migrating in Winter to the North of Africa. In England we have traced it several miles North of Doncaster, which place has hitherto been considered its Northern limit in this country. Charles Waterton, Esq., informs us that it is not uncommon near his seat, Walton Hall, four miles from Wakefield; and W. H. R. Read, Esq., meets with it in due season on Hooton-Pagnell Common.

White Heron, *Ardea alba*,—Héron aigrette, *Fr.*—Federbusch Reiher, *G.*—An adult male is figured rather more than half the living size. It is not one of Lear's best, his powers having been cramped by the, in this case, insufficient size of the paper. Rare in England, more common in the East and South of Europe, and the adjacent parts of Asia and Africa, where, however, it is still local. Feeds on various reptiles and fishes, and resembles the Common Heron in habits. "Builds in trees, and lays from four to six eggs, of a bluish white." In Spring the adult is adorned with a beautiful plume of feathers on the back, extending beyond the tail. This ornament is absent in young birds.

Common Creeper, *Certhia familiaris*,—Grimpereau, *Fr.*—Picchio passerino, *It.*—Gemeine Baumlaufer, *G.*—An adult male is figured, but the bill is too thick and large, and the whole bird not over and above characteristic. Common in almost every part of the European Continent, but becomes more rare towards the North, as might be expected from its delicate form and texture of plumage, and its insectivorous diet. In this country it is a well-known and most interesting resident.

Bewick's Swan, *Cygnus Bewickii*,—Cygne de-Bewick, *Fr.*—A male is re-

presented, one-third of the living dimensions. It is not in Lear's happiest style. The distinctness of this species was first made known to the scientific world by Mr. Yarrell, in 1829. It breeds on the sea-coasts within the Arctic Circle, being only met with in the interior on its passage: it is rare in England. The nest is formed of Moss-peat, is about six feet long, by four and three-quarters wide, and two feet high exteriorly; the cavity being a foot and a half in diameter. The eggs are brownish-white, slightly clouded with a darker tint. This bird is at once distinguished from the Hooper Swan by being one-third smaller. For a more minute description we must refer our readers to Mr. Gould.

Wood Lark, *Alauda arborea*,—Alouette lulu, *Fr.*—Baum Lerche, *G.*—A male is well figured, except that, although professedly of the natural size, it gives an idea of too large a bird. Inhabits the Continent of Europe, but in this country it is most abundant in the South. It is, however, not uncommon in Yorkshire. Its habits are pretty generally known.

Scaup Pochard, *Fuligula marila*,—Canard milouinan, *Fr.*—Berg Ente, *G.*—Lovely figures of a male and female, somewhat under the natural size. Breeds within the Arctic Circle, passing Southwards in immense flocks in Autumn, to the shores of Britain, Holland, France, &c. It is almost exclusively marine, and of course belongs to the diving *Anatidæ*. Feeds on marine mollusca, plants, &c. "It makes a hoarse noise, and has a singular habit of tossing its head and opening the bill, which is more particularly observable in Spring, while it is swimming and sporting about on the water." The female wants the green on the head of the male, and altogether differs very materially from the other sex. Hence it has been characterised as *Anas froenata*. Young birds resemble the adult female.

Crested Lark, *Alauda cristata*,—Alouette à-haussecol-noir, *Fr.*—Berg Lerche, *G.*—A male and female figure very well in the plate. Abundantly distributed over the temperate portions of the Continent; also the North of Africa, the whole of Asia-Minor, and the high lands of India. Is more solitary than the Sky Lark, from which it is easily distinguished by its crest. It is said to perch on trees, which, from the structure of the claws, we think likely. Sings soaring in the air. Builds early, and on the ground, laying four or five ash-brown eggs spotted with a darker colour. "The male is less than the female, and has not so long a crest." At all events the feathers on the head are less constantly erect in the female.

Garden Fauvet, *Ficedula hortensis*,—Becfin fauvette, *Fr.*—Beccafico cenerino, *It.*—Graue Grasmücke, *G.*—An extremely pretty and very accurate representation of a male. Ranges over all the temperate portions of Europe, and is not uncommon with us. Its habits do not differ very materially from those of its British congeners, the Blackcapt and Whitethroated Fauvets.

Campsall Hall, Nov. 30, 1838.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 141.)

Asplenium.—Ασπληνιον, from *α*, negative, and σπλην, the spleen, because it was supposed to be efficacious in removing disorders of the spleen.

Asplenium filix-fœmina, Female Shield-fern, Lady Fern.—The beauty of this common plant occasioned its name of Lady Fern, contrasting as it does with the robust habit of *filix-mas*, the Male Fern. Its natural habitation is in swampy woods and damp hedge-rows, or, as Sir Walter Scott incidentally remarks in his novel of *Waverley*—

> "Where the copse-wood is the greenest,
> Where the fountain glistens sheenest,
> Where the morning dew lies longest,
> There the Lady Fern grows strongest."

Asplenium lanceolatum, Lanceolate Spleenwort.—A very distinct and handsome species of Fern, little known except in some parts of England and France.

Asplenium trichomanes, Common Maiden-hair Spleenwort, Wall Spleenwort.—This is a pretty Fern, not unworthy of a place on shady rockwork, and about grottos and fountains. Its medical virtues are very doubtful. It has been used as a substitute for the Maidenhair of warmer climates, *Adiantum capillus-veneris*, from which a syrup is made, perfumed with Orange-flowers, and called syrup of capillaire.

Aster.—From αστηρ, a star, because the flowers have a stellate, or radiated form.

Aster tripolium, Sea Starwort.—It is not unfrequently gathered and sold for Samphire, either by mistake, or from its being collected without hazard; but it is supposed not to possess the like detersive qualities. Called *tripolium* because, according to Dioscorides, the flower changes its colour thrice in one day; but no such phenomenon is observable in our climate.

Astragalus.—From αστραγαλος, a bone of the foot, which the legume of this plant somewhat resembles.

Astragalus glycyphyllos, Sweet Milk-vetch, Wild Liquorice.—From the resemblance of a cluster of the pods to the fingers of an open hand, this plant has been called Ladies'-fingers; or Crow-toes, from their fancied similitude to the toes of that bird. The more proper English name has been derived from its being supposed to increase the quantity of rich milk in Cows feeding on it. It has the advantage of growing on the poorest soil, even on obdurate Clays, where scarcely any other plant will vegetate. It will grow as tall as Clover, and make exceed-

ingly fine hay, though scarcely attaining perfection the first few years. When fully established, it produces annually a larger supply of fodder. It is peculiarly eligible on very poor lands; but advancing slowly after once cut, it is greatly inferior to Clover. The sweetish taste of the leaves is said to change on the palate to a disagreeable bitter.

Atriplex.—From α, not, and τραφειν, to astonish.

Atriplex portulacoides, Shrubby Orache, Sea Purslane.—The whole plant abounds with fossil alkali or Soda. The silvery glaucous hue is remarkable, and not inelegant.

Atriplex patula, Delt Orache, Spreading Halberd-leaved Orache.—It is sometimes gathered as a potherb, and eaten in lieu of Spinach and other greens. Cows, Goats, Sheep, and Swine eat it, but do not seem to be fond of it.

Atropa.—After Atropos, one of the Fates or Parcæ, supposed to sever the thread of life ("*Atropos occat.*"), in allusion to the deadly quality of the plant.

Atropa belladonna, Deadly or Sleepy Nightshade, Dievy-berries, Dwale.—The more gentle appellation of this species, *Bella-donna* (Fair Lady), probably arose from its being used as a cosmetic by the Italian belles. The caterpillars of *Phalæna antiqua* and *P. brassica* feed upon its foliage. The juice of the ripe berries stains paper of a beautiful and durable purple. Connected with this deleterious herb (*Solanum lethale* of the older writers), is a remarkable historical event, which, although at the time enrolled among the annals of patriotism, must, in a more civilized age, be reprobated as an atrocious instance of barbarian perfidy. According to Buchanan, in the reign of Duncan I., King of Scotland (afterwards murdered by the tyrant Macbeth), Harold, the Dane, invaded England, while his brother Sweno made a descent upon Scotland. Landing in Fife, he gained a signal victory, and pursued the Scots to the ancient Perth, where the remnant of their army scarcely retained the power of resistance. The Scottish monarch, possessing little martial energy, entrusted the conduct of affairs to his lieutenants, the wily Banquo and the aspiring Macbeth. While the latter was employed in raising fresh forces, the former negociated a truce; engaging likewise to supply provisions for the hostile army. The liquors sent proved a deadly potion from an infusion of the Dwale. The invaders drank so freely and unsuspectingly, that they were quickly overpowered and slaughtered by their treacherous foes, and with difficulty re-embarked even their king.

Avena.—From *aveo*, to covet; so called because cattle are fond of some of its species.

Avena fatua, Bearded Wild Oat-grass.—The flowers serve rustic fishermen, instead of artificial flies, to catch Trout. The awns are used for hydrometers, being very sensible to the dryness or humidity of the atmosphere, which changes cause them to contract or expand in an animated manner. By a similar move-

ment the seed is gradually insinuated into the earth; and LINNÆUS informs us, that if the Bearded Oat be housed with other grain, the glumes will very soon be found empty from the like procedure. It is sometimes so prevalent amongst Barley as almost entirely to choke it; on such occasions it has been thrashed out and sold for Horse-Corn. It may be extirpated by repeated fallowing, or laying down the land in Grass. When mixed with Wheat this grain is highly objectionable to the miller. In Spring it is scarcely distinguished from the Wheat-plants, so that it cannot be selected and weeded out; hence the necessity of attending to the purity of the seed-Corn.

Avena flavescens, Yellow Oat-Grass.—Mr. SWAYNE says it is the best of the genus for the use of the farmer; and Mr. SALISBURY reports favourably of it. Though Mr. SINCLAIR proves its produce not to be very great, nor its nutritive qualities considerable, combined with other Grasses he recommends it for elevated and exposed situations. It probably may be more acceptable to Sheep than to other cattle. Several of our pasture Grasses are injured by drought acting upon the stalk, not molesting the root, but withering the succulent base of the straw which arises from the upper joint; in consequence of which the panicle and connecting straw dry away, while the foliage and lower leaves remain uninjured. None are so obnoxious to this injury as the present species, and in some seasons almost the whole of its panicle will be withered in a field of surrounding verdure, especially where the herbage is reserved for mowing. It is capable of being manufactured into straw plat for hats, equal in fineness and evenness to the Leghorn. The Society of Arts, both in London and Dublin, have bestowed honorary rewards for this discovery.

Avena pubescens, Downy Oat-grass.—This species is disagreeable to cattle, not only mechanically, but, according to Mr. SALISBURY, from the foliage being extremely bitter.

Avena pratensis, Meadow Oat-grass, Narrow-leaved Oat-grass.—This species is remarkable for thriving, either on exposed dry situations, or under irrigation; but its produce and nutritive powers are inferior to those of many other secondary Grasses.

Azalea.—From αζαλεος, dry; as preferring an arid soil.

Woodside, near Liverpool,

Oct. 12, 1838.

CORRESPONDENCE.

Cursory Remarks on "The Naturalist."

To the Editor of the Naturalist.

Dear Sir,—In a bye-gone No. of *The Analyst*, when you were part Editor, one of your contributors headed an article with a rather severe animadversion on the "use of apologies." Thinking it not unlikely you may partake of those sentiments, I have taken the liberty of addressing this sheet to you without the formality of offering one. In commencing I can not allow the opportunity to pass of alluding to your excellent number of *The Naturalist* for October last, containing the memoir of Dr. Latham. You have doubtless, ere this, had many gratulations, from other readers of your periodical, on the very able manner in which you have treated the narrative of a great and good man. My poor tardy offering of thanks is no less sincere; for, believe me, I experienced much pleasure in the perusal of it, and look forward with increased delight for the succeeding numbers. The plate is clear and expressive, and forms an admirable frontispiece to the fourth volume.

I hope in your list of living naturalists "to be shewn up," the worthy 'squire of Walton Hall will not be forgotten. I long to see his face in print, if only to look his likeness a volume of thanks, for his enchanting *Essays on Natural History*, all of which are welcome to one's eyes, as the faces of old friends ever ought to be. Surely I am not singular in wishing the 'squire, who, as he quotes, is in his "vernal vigour and autumnal green," would take his "lute from the wall," and favour us with a few more of its pleasing strains.

Mr. Rylands's article in the Oct. No. (p. 8), on the use and abuse of prints, sounds so like the crack of a critic's whip, that I dread saying much, for fear of coming within the reach of its lash. Mr. R. has apparently overcome the difficulties, "thickly strewn as leaves in vallambrosa," that beset the path of the entomological tyro, and now thinks lightly of them; and so doubtless will others when they can call a well-filled cabinet of creatures with titles like hieroglyphics by name; for my own part I am not only glad to be able to assist the circulation of works on insects by purchasing, but readily avail myself of the proffered help of the pages of Shuckard's *Manual* and Westwood's *Introduction*, &c. I only regret that Curtis's *British Entomology* is too expensive to allow me to add that splendid work to the number. In *The Naturalist* for November there was no review of Gould's *Birds of Europe* from your pen. I hope those really instructive and pleasing papers are not to be discontinued.

Departure of Swallows in 1838.

Have any of your correspondents called your attention to the time of the departure of the Swallows this last season? If so, does the date of the large flight agree with the 29th of September?, on which morning, very early, the greater part of our welcome Summer visitants left this neighbourhood. The day or two preceding the 28th had been wet and cold, so that I could see little of them; but the 28th was a very lovely "last of the Summer days" of 1838. The sun shone almost the whole of the day in cloudless splendour. The Swallows were early astir, and highly busy, in assembled multitudes on the roofs of one or two houses exposed to the rays of the morning sun. In that very excellent work the *Journal of a Naturalist*, the Swallows are said to travel "much by night, requiring the light of the moon to direct them." If so, I suspect the colony located here made a "morning flit" of it, for I watched them practising their circling flight rather late in the eve, and on the morn of the 29th they were gone. The wind, I observed, was from the North, and the moon shone so as to lengthen their day. After this I saw a dozen or two skimming about the village until Oct. 10, and as late as the 20th I observed a single pair flying about, on which day, for the first time this Autumn, I heard the Royston Crow (*Corvus cornix*), a regular visitant to these parts at this time of the year.

Notes on British Reptiles.

In my rambles on the 28th of Sept., I caught three small specimens of the Nimble Lizard (*Lacerta agilis*), all of them without tails, yet very lively. Are these little creatures produced so? or is it the effect of accident? In two I could find no appearance of a wound; the third got away before I could examine it. These pretty diminutive reptiles are easily tamed, and will readily feed out of the hand, when kept in confinement. Some little time since, I had two of them in a large glass globe, or Gold-fish jar, with a Mole Cricket (*G. gryllotalpa*) and a Common Snake (*Coluber natrix*). At the bottom of the jar I put Sand, and occasionally introduced a sod of fresh Grass. These little prisoners I fed every morning with Ants, House Flies, the larvæ of Gnats, and bread-crumbs soaked in milk. They lived to all appearance in perfect harmony, till my leaving home for a week or two in the Autumn, when their wants were not quite so regularly attended to; the consequence was that the Snakesacrificed poor little Moly to his appetite, and severely attacked and injured one of the Lizards. I then turned them into a pasture, to purvey for themselves from Nature's "board of green cloth."

Delay in the Publication of Bell's "British Reptiles."

Can you divine the reason why the second part of Bell's *Reptiles* is not yet out? The first No. I purchased in February last, but have not been able to get the succeeding one. It appears an unwarrantable delay of the publishers', if the fault rest with them.

Notice of a white Thrush.

The white Thrush (*Turdus musicus*) I spoke of in my last, died about a fortnight since. It was taken from a nest with two other birds in it, of the usual colour. The pair which had the misfortune to be attired in the old-fashioned sober garb of their parents, were mercilessly consigned to the care of a Ferret. The *lusus naturæ* escaped their early doom, to be "cabined, cribbed, confined," in a very primitive cage, constructed for the purpose, where it existed four months, a picture of dirt and discomfort. On examination I found the albino had not a dark feather about it, but was what I should call a "fowl white." With a wish to give the *rara avis* better treatment, I tried to purchase it, but without success.

Pig suckled by a Cow.

A friend of mine, on going into his pasture the other day, observed a Pig, about eight months old, on unusually intimate terms with one of his Cows. The latter was lying on the ground, with the Pig between her legs, sucking the teat; he stirred up the old lady; but the squeaker, not at all abashed by his presence, and unwilling thus prematurely to conclude his repast, rose up on his hind legs, and again laid hold of the dug. This position he could not long retain. The owner had for some time noticed how quickly the Pig got flesh, whilst a twin brother, who fed at the same trough and had apparently the like advantages, did no credit to his keeping. This circumstance reminds one of the old charge brought against the quiet, harmless, and shamefully-persecuted Hedge-hog, that of forestalling the milk-maids.

I was very glad to see a commencement of a series of papers from the pen of Edwin Lees, F.L.S., in *The Naturalist* for November. If any thing can attract to the study of Natural History the many who idle away their lives in the country, heedless of the beauties ever within their reach, it will be the writings of those who thus fascinate whilst they instruct. Mr. Knapp's work, the *Journal of a Naturalist*, Waterton's *Wanderings* and *Essays*, White's *Selborne*, and your own delightful book, *British Song Birds*, are the works I fancy likely to do

the most good, and enlist in their ranks the greater number of admirers, who, not content with, or stopping at admiration, may possibly at some future period, by dint of perseverance, go on to attain the summit now proudly crowned by the most able naturalists.

I hope you find an increasing demand for your periodical, for richly it deserves it. Wishing it all possible success, and yourself health and happiness,

I am, dear Sir, with unfeigned respect,

Your obedient servant,

Stoke-ferrie, Norfolk,
Nov. 23, 1838.

RICHARD PIGOTT.

[Mr. PIGOTT breathes the spirit of a real lover of Nature, and his communications are therefore acceptable to us in any shape which he may please to give them.—We will make inquiries respecting the delay complained of in Professor BELL's new work.—ED.]

DEPARTURE OF SWALLOWS IN 1838.

To the Editor of the Naturalist.

DEAR SIR,—A friend has remarked to me that he noticed the Swallows to take their departure this Autumn much earlier than usual. I think he stated that very few remained about Woodside after the commencement of October; and he put the question to me, whether they might not have foreseen the boisterous weather which followed, and so took an earlier departure to avoid it.

Allow me here to observe, that by delaying communications of passing interest, such as notices of the seasons, till the season is over, they lose their value; see Mr. PIGOTT's remarks on the Spring of 1838. You do not insert them till Autumn, and before any remarks could be made, either to corroborate or otherwise, and those remarks be inserted, it is 1839, and they are in another volume. Trusting that you will excuse the freedom of my remarks, I beg to subscribe myself,

Yours very faithfully,

T. B. HALL.

[We invariably give the earliest possible insertion to notes on the seasons, and communications of a similar character. But at the same time we cannot think that they ever lose their value in the eyes of the naturalist who is in the habit of regularly recording and keeping his daily observations.—ED.]

CHAPTER OF CRITICISM.

On the Medium of Mental Power in Man and all other Animals.

To the Editor of the Naturalist.

Sir,—In the concluding paragraph of Mr. Lankester's lecture, published in your last number (pp. 128—139), occurs the following passage, which I cannot allow to pass without comment:—"Man stands in the world supreme, and, independent of the divine gift of reason, exhibits a structural perfection that would point him out as the master-work of the creation. But there is given to him a principle denied to other forms of animated beings, a principle that connects him with all that is divine and spiritual beyond the bonds of matter, and the records of time." What this "principle" is, or is intended to be, we shall presently inquire; but let the intended sense of this passage be what it may, it will soon be evident, that if we understand the word "principle" in its obvious signification,* the lecturer here not only contradicts reason, but even his own assertion in a previous part of his lecture.

At p. 130 we find the following:—"Had it been the object of this paper, it would perhaps not have been uninteresting to have pointed out the gradual development of organs that takes place in the animal kingdom, in order to shew how beautifully gradual are the steps by which the Creator has proceeded to form that master-piece of the animal creation, Man." It is well known, too, that there is no actual line of demarcation between the so-called classes of Nature; that the higher species of one class lead gradually, and indeed imperceptibly, into the lower of another; and that it is only by observing those species which do not so closely approximate, that any rational classification can take place. Man may indeed classify, but let us not be misled by *words*; it is not by classification, but by gradual development, that Nature proceeds throughout her whole system; and, taking "principle" in its proper signification, we can never allow that in any stage of her proceedings she introduces a single new principle. Animals have no principle which is denied to plants; for if this were the case, there would never have been any difficulty in distinguishing those species which lie on the confines of the two artificial classes. This, I presume, Mr. Lankester will admit without hesitation, if only Man be allowed to form an exception to

* We talk of the "vital principle;" take away the word "vital," and the remainder will, I apprehend, be the meaning attached by every one to the word principle in the above passage. But it is a word that should not be employed without a previous definition.

the order of Nature, for it is said, "Man possesses a principle denied to other animals." But in making this exception he falls into two manifest absurdities.

1st.—If this be a true interpretation of Nature, she is inconsistent with herself. We have already seen the immense variety which, as is universally allowed, Nature is capable of producing without the introduction of any new principle. From the lowest Cryptogamic plant to the Oak, what an immense distance, what apparent contrariety! but no new principle. From the Oak to the highest species of Mammalia (Man, for the present, excluded), what a distance, what apparent contrariety! but no new principle. If, then, Nature shows so great variety consistently with so great simplicity of plan; if she has reached almost her highest point without the introduction of any new principle, surely in the absence of all confirmatory evidence, it is absurd to suppose that on the sudden, when her labours are almost complete, she should so totally change her plan as to require a new principle for the creation of rational beings. If a Cryptogamic plant and a quadruped can be formed on the same principle, surely so also can the latter and Man be.

2nd.—In making this exception, Mr. LANKESTER is inconsistent with himself. He himself expressly asserts that the progress from the lowest unreasoning animal to the highest is by gradual development, not by the introduction of a new principle; he must, therefore, be willing to own that the vegetable passes into the animal kingdom by the same almost imperceptible steps, and that animals possess no principle denied to plants; otherwise the distinction would be clearly marked; that is, we could immediately point out where the vegetable kingdom ended and the animal kingdom began. But notwithstanding this, he would doubtless deem it highly absurd to place plants and animals in the same division. Now, according to him, therefore, there is a *greater* difference between the highest quadruped and Man (on account of the superadded principle) than there is between the former and the lowest plant (the same principle being here in common); and yet, wonderful to say, he places Man at the head of a division of those very animals from which, according to his own assertion, Man is separated by so wide a gulph;—"that division of animals at which Man stands at the head." (p. 138). What system of classification is this, in which opposites are brought together, and *comparatively* similar things separated?

It is now necessary to inquire what this principle is, which is possessed by Man and denied to other animals. Let us see. This principle, we are told, "connects Man with all that is below him in creation, and with all that is divine and spiritual beyond the bonds of matter." Softly, my good Sir! we have here a very comprehensive principle indeed; but it will be worth our while to inquire whether there be not more sound than sense in this grand sentence. "Connects Man with all that is below him in creation;" there is great ambiguity in this clause.

It may signify that this principle connects Man with the rest of creation by assimilation; such might be the sense of the words; but the context denies this, since, instead of being assimilated to the rest of creation by means of this principle, he would rather be completely disjointed and set apart. Things are connected together by what they possess in common, and not by peculiarities.—Or, it may mean that Man is thereby enabled to place himself in connexion with, and render subservient to his uses, "all that is below him in creation." To this there are two objections. 1st., This kind of connexion is brought about, not by a principle, but by a faculty or faculties. The Cat places itself in connection with the Mouse, the Spider with the Fly, the caterpillar with the leaf, not by means of a principle, but by means of appropriate faculties and instincts. But the sphere of action of the inferior animals is confined because their faculties are so. Man possesses higher faculties, and therefore stands in connexion with a wider range of natural phenomena. A being with higher faculties than those engaged by Man, if such be possible, would in consequence possess a still wider range of action, but it would be in the highest degree absurd to say that he was for this reason endowed with a principle denied to Man.—2nd., This sense of the words (namely, "that Man is enabled by this principle to place himself in connexion," &c.) is rendered impossible by what follows; for then the sentence would run thus:—"Man is by it enabled to place himself in connexion with all that is below him in creation, and also with all that is divine and spiritual beyond the bonds of matter and the records of time." This last clause makes me fear that the writer did not himself attach any particular meaning to the word "connect;" for he surely does not intend to affirm, that matter can place itself in connexion with spirit. At the present day, if a man sees what is called a "ghost," it is at once ascribed to derangement of the nervous system, or of the imagination, but it is never for a moment supposed that the apparition is a reality in any other sense than as it is real to the individual affected. It is therefore a mere assumption, that Man is connected with what is "spiritual beyond the bonds of matter." Similarly situated are we with regard to "all that is divine beyond matter." First *prove* that there is any thing divine beyond matter, before you venture to assert that any "principle" can connect us with that divine thing. "With all that is divine and spiritual beyond the records of time"! Here is the climax of mysticism, with a vengeance! Is it meant to be asserted that Man can see that which has no existence, that he can have any notion of that which is a negation and a negation only, of all that he has learned, and of all that he is learning, through the medium of the senses? Is it meant to be asserted, that he can connect himself with that which never happened, or that he can foresee that which at some future time will happen, in any other way than by induction from what he already has experienced? And yet this must be what is intended, if we

take the words "beyond the records of time" in their obvious sense; for time is measured by actions, and therefore by referring to "what is beyond the records of time," we either refer to the negation of action, which is nothing, or to those actions which have not yet taken place, which, except in the manner already noticed (that is, by induction), is equally referring to a negation. Such assertions cannot, I think, have been contemplated by the lecturer; but we have examined his words under every sense which they will bear; in none of these have the individual meanings produced collective sense; we must therefore conclude, either that the writer attached to the words some peculiar meaning of his own, inconsistent with that commonly received, or, that they were unconsciously used as a medium for conveying *non*sense.

Let us proceed.—"It is because he possesses this principle, that he can survey the world we live in." This, it must be owned, is a marvellous anti-climax, after being in connexion with divinity, and spirit, and eternity. But it is not only an anti-climax; it is not true;—for if it is by means of this principle that Man surveys the world he inhabits, then every animal which possesses perceptive faculties must also be possessed of this principle; which comes in direct contradiction to the assertion of the lecturer. The Eagle, in its lofty soarings, "surveys the world we live in" to great advantage, and yet *it* is not allowed any peculiar principle to enable it so do so. This requires explanation.—Again:—"measure its ponderous movements through space, expose the elements of which it consists, investigate its mineral strata," &c. &c. "He looks upon a world filled with beauty, and sees that it is made for him." But what renders it beautiful to him? Is it the same principle which enables him to "measure the world's ponderous movements through space"? Is it the same principle which inspires the poet's page, and which assures the calculations of the mathematician? which numbers the stars, and which adorns the canvass? We have the answers to these questions before us. "The numerous tribes that we have glanced at are all the servants of Man, and they are his because he possesses a mind to see their adaptation to his purposes, and to comprehend the relation in which they stand to him as their lord and master." Yes! this is the true answer; but what has this to do with any peculiar "principle"? The Horse and the Dog possess minds superior to those of the animals which formed the subject of Mr. LANKESTER's lecture; they possess more and higher mental faculties, but the *principle* is the same; Man possesses higher powers than all, but where is the need of going to a new principle to account for them, since, in the case of differences of mental power among the inferior animals, none is needed? There is none at all; and those who do so, especially when professedly speaking of scientific subjects, leave the broad highway along which science can alone be successfully followed, and lose themselves in the endless mazes of vague hypothesis and fruitless conjecture.

This separation of Man from the rest of Nature, is, I am aware, a popular notion. It was, I suspect, to this notion, to this prejudice, that the lecturer wished to do homage, and thus to secure the favour of his audience. But the true man of science lives to teach what he himself has learned, what is real and capable of proof, not to abase himself before popular prejudices, where these are also popular errors, and therefore representatives of nothing existing in external Nature. The true man of science carefully distinguishes between what is discovered and what is only supposed capable of discovery; the one is fact, the other hypothesis; and, again, between rational conjecture, and conjecture founded neither on analogy, induction, nor reason. To this last class belongs Mr. LANKESTER's "principle." But this irrational conjecture (for no evidence can be brought to its support) he gives out as a well-ascertained fact, as a truism which needs no proof; thus of necessity weakening, both in his own mind and in those of his hearers, the real grounds on which all science rests; since he makes no difference between the supposed certainty of that which no reason supports, and that which is founded on nothing but reason. It may be said, that the point at issue is comparatively unimportant, and so it may be; I am willing to grant, for the sake of argument, that it *is* unimportant intrinsically, whether Man does possess a "principle denied to other animals," or no; but it is *not* unimportant whether we believe either way without carefully investigating the grounds of our belief, or whether we receive nothing as true but what can be proved to be so by a well-connected chain of evidence. Once admit that evidence is unnecessary to the progress of science (and every one does so who give out a mere hypothesis as a known fact), that is, to the determination in our own minds, what are and what are not natural facts, and what are and what are not the relations which these natural facts bear to one another; admit this, and you at once destroy the firm foundation on which the glorious superstructure of modern science has been raised; you at once return to that system of hypothesis which was the characteristic and the bane of ancient philosophy, and to the fruitless and endless logomachies of the middle-age scholastics, who deluged the world with their wordy disputations, and at the end had nothing to show as the product of all their noise.

But I deny that it *is* unimportant to determine Man's situation relatively to the rest of animated Nature, or rather (since all own that he stands at the summit) what it is that exalts him in the scale. Other animals we class by their structure; but Man, it seems, is privileged to leave structure out of consideration in determining his own rank, and to resort to any fancy that he imagines will exalt him. It is, however, but a paltry and contemptible satisfaction which is obtained by contemning Nature, and setting up artifice in its stead. Why is one animal superior to another? Its structure is superior. This is saying every

thing; for where was Nature found so absurd, so self-contradictory, as to expend her cunning in constructing that which by some subsequent omission she renders useless? What animal is there whose habits and instincts are not in conformity with its structure? Do we see the Eagle striving to burrow under the earth, or the Mole to soar in the air? Do we find the Tiger living in flocks, and feeding on herbs, or the Sheep aspiring to the solitary glories of the chase? Such things are never seen. The Eagle has the spreading pinions, the powerful pectoral muscles, and the piercing sight which at once point it out as the inhabitant of the firmament; and it has instincts suited to the structure. In all animals we find the same conformity of structure and instinct; so that, the structure being given, the instincts may be pretty nearly predicated, and *vice versâ*. If the bird of prey could speak, it might possibly say, "*we* possess a principle denied to other forms of animated beings, a principle that connects us with all that is below us in creation, &c.," and with as much reason as is evinced by our own use of such language; since it is not the *amount* of difference, but the mere *fact* of difference which, if at all, would justify the assumption of a new principle. It is by the same principle that we add together two units and a million. So it is in Nature. The beginning of animal life is the simplest possible; this is the foundation, and all other forms of animated being are constructed by simple addition to this primary foundation. The principle employed by the architect is the same when he lays one stone upon another as it is when he puts the finishing stroke to the Grecian temple or the Gothic cathedral. So Man, the summit of the natural edifice, possesses no principle peculiar to himself and denied even to the simplest animalcule. In saying, therefore, that Man "exhibits a structural perfection that would point him out as the master-work of the creation," we shall be grossly inconsistent, shall show a lamentable want of confidence in the consistency of Nature, if we do not also expect a corresponding perfection in his mental powers. If, in all other animals, structure and mind go together in perfect harmony, what do we make of Man but a splendid monster, if we expect *his* structural superiority, which "points him out as the master-work of creation," to be unaccompanied (and on the very same principle as in the inferior animals, for this is the very point at issue) by a corresponding superiority of mind which shall enable him to assert and to maintain his sway?

This, then, is the truth: Man possesses *faculties* superior to those of all other animals. We know *nothing* of the manner in which those powers are communicated; and the pretended explanation by an immaterial principle, is no explanation at all; for it is just as easy to suppose matter acting in a given manner, of its own force, that is, in possession of certain properties, as it is to suppose that it is influenced by a spiritual essence. It is precisely as difficult, nay, as impossible, to account for the growth of a plant, as it is to account for

the existence of the mental powers which distinguish Man from the lower animals; if, therefore, this immaterial principle *must* be resorted to at all, it would certainly be less absurd to employ it as an explanation of *vitality*, than as an explanation only of the *higher* results of that vitality.

But with regard to spirit, I must enter my decided protest against its introduction in any scientific system whatever. "Spirit" is a word which, like the line or the point in Geometry, represents no reality in Nature; with this difference, however, that the geometrical terms are useful and even necessary in the solution of important problems, while the popular "spirit" can never serve any other purpose than to confound in the mind the true basis of scientific investigation, without producing the slightest countervailing advantage. Spirit is the negation of matter; and, since the man of science has to deal exclusively with matter and its operations, spirit must of necessity be to him a non-existent chimera. What he has to do, and what we all have to do, is to learn what *is*, not *how* it is, or what we fancy *may* be. We know that the earth revolves round the sun; we can explain the laws by which this takes place; but who can say what is the *cause* of the phenomenon? We can say that bodies gravitate to the centre of the earth; can determine the comparative forces with which different bodies do so; but who can say what *makes* them gravitate? So it is with every other operation of Nature, with the motions of the minutest atoms of non-sentient matter, and with the workings of the human mind.

The paragraph on which I have animadverted is so obscurely worded that it would almost seem to be the intention of the writer to leave a loophole for escape by means of a quibble, in case of necessity. He will perhaps say, that by his principle he meant reason. But this will not do; for 1st., reason had been metioned before, and the "but" plainly indicates that this "principle" is considered in the light of a superaddition to the "divine gift;" 2nd., reason is not a principle, but a faculty; 3rd., if it be answered that "faculty" was intended, and not "principle," I reply, that reason *does not* connect Man peculiarly "with all that is below him in creation," nor at all with what is "divine and spiritual beyond the bonds of matter and the records of time;" reason *does not* enable us to "survey the world we live in," nor is it the faculty which makes the world and all it contains seem beautiful in our eyes. If it had been said that Man possesses many and noble faculties which are denied to the inferior animals, then indeed there would have been no room either for objection or misunderstanding; but as it stands, the paragraph can be viewed in no other light than as a high-sounding but meaningless lure, to catch the applause of the ignorant and the unreflecting, and as a homage to prejudice and blind self-esteem, equally unworthy of the philosopher, whether it be sincere, or whether, as I suspect is the case, it be

simply an enthusiasm, *assumed* for the sake of bribing suffrages which, thus acquired, must ever be worthless.

Yours respectfully,

December 6, 1838. A. H.

[Although the preceding epistle is long, yet as it is to the point, is ably argumentative, and relates to a subject of the greatest interest and importance to the philosophic naturalist, we have much pleasure it giving it insertion.—Ed.]

Query respecting Bohler's "Lichenes Britannici."

To the Editor of the Naturalist.

My dear Sir,—Some time since I was induced to subscribe for, or at least take in, a work entitled "*Lichenes Britannici:* or Specimens of the Lichens of Britain; in monthly fasciculi, with descriptions and occasional remarks. By J. Bohler." The work, as far as it goes, is very creditable to Mr. Bohler (the price, 3s. 6d. per fascic., perhaps rather too high); but what I have to complain of is, the work has *stopped short* at Fascic. xvi., which was published in Oct. 1837, and no asseverations to my bookseller can induce him to get it "*out*" further, although a "pretty considerable" number of British Lichens remain to be either figured or exhibited. Not having ever heard of Mr. Bohler's decease, I wish very much to know where he has been *vegetating* all this while, and when he means to shew his "crust," "disc," or "apothecia" again? If, in accordance with the tribe he illustrates, he has been lying by all the summer, surely the present wet weather should now induce him to spread forth his green *frond* again like *them*. At all events, I think after this long interval (above a year) some explanation is due to the purchasers of the work as to the reason why it is not proceeded with. As I see the provincial publisher lives at *Sheffield*, the Editor of *The Naturalist* may be perhaps near enough to communicate stimulus sufficient to rouse Mr. Bohler from his lethargic slumbers.

Yours faithfully,

Forthampton, near Tewkesbury. Edwin Lees.

Nov. 20, 1838.

[If Mr. Lees will favour us with the address, in Sheffield, of the author or publisher of the work alluded to, our correspondent's epistle shall be laid before the party concerned; although, at the same time, we fully anticipate the reply. —Ed.]

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

ZOOLOGICAL SOCIETY.

At a recent meeting Mr. Ogilby exhibited two specimens of *Lagomys*, a singular animal, of which two individuals were brought over by Prof. Royle from the Himalaya Mountains, where it is never met with at a less elevation than 11,000 feet. It is very rare, and perfectly unique, partaking equally of the character of the Rabbit and the Hare. It has a very extensive geographical distribution, being described by Prof. Pallas in Southern Siberia, where the natives are often indebted to the providence of this little animal for winter stores of provisions for their cattle. They store away their food under little conical hills, which the natives open for the provisions they contain; the animals residing in a hole underneath the snow at some distance, to which they burrow an approach.

MEDICO-BOTANICAL SOCIETY.

Nov. 21.—This was the first meeting of the season. Dr. Sigmond commenced by delivering a lecture on the cultivation of the Tea-plant. The learned professor, after adverting to the mystery in which the system of the Chinese in preparing tea had been for some time enveloped, proceeded to explain its culture. It appeared that when the time for picking the finest sorts of tea arrived, the labourers employed were compelled to avoid gross food, and adopt the purest diet; and, moreover, that they performed the operation in gloves. The authorities quoted, showed that this extreme delicacy was for the purpose of preventing the slightest injury to the leaf from the breath or skin. It would be as well if this example of cleanliness was followed by the tea-dealers of England. The Chinese, who could afford it, drank their tea strong; and they had a proverb by which the poverty of the individual was implied, who "drinks weak tea and eats insipid rice." Samples were exhibited of every variety of tea imported into this country and the Continent. Amongst other varieties there were some fine specimens of the Pekoe used in Russia, the "caravan teas," which are brought overland from Kiachta, and the "Howqua's Mixture" tea. That the Hong Merchants used not generally to deliver for exportation their finest sorts there was no doubt, for it was proved by the fact, that since the opening of the trade many new varieties had been brought to England, and, amongst others, he would mention the "Howqua's Mixture," which had now become a standard tea in this country. The flower of the China Tea-plant had a fine and fragrant aroma, and differed in the form of its blossoms from the lately-discovered Assam Tea-shrub.

The learned professor ably illustrated his observation by elegant paintings, the property of Mrs. Morrison, the widow of the late celebrated missionary, Dr. Morrison.

BOTANICAL SOCIETY.

Nov. 2.—John Edward Gray, Esq., F.R.S., President, in the chair.—The Secretary announced a donation of thirty-six parcels of British plants, presented by the members. Also a donation of South-American plants from Mr. W. H. White. Some members were elected, and others proposed.—Dr. Francis Bossey read a narrative of two very interesting excursions made by several members of the Society to Cobham, Kent, during the present year. After animadverting on the very vague and indefinite manner in which the place of growth of plants is generally described, and stating the advantages which would result from the use of the compass in determining the habitats of those which are more strictly local, the author proceeded to remark on the more rare and interesting species observed during these excursions, and pointed out new localities for *Polypogon littoralis*, *Poa distans*, *P. procumbens*, *Galium tricorne*, *Anagallis cærulea*, *Atropa belladonna*, *Bupleurum rotundifolium*, *Polygonum maritimum*, Ray, *Chlora perfoliata*, *Adonis Autumnalis*, *Papaver hybridum*, *P. somniferum*, *Marrubium vulgare*, *Erysimum cheiranthoides*, and *Orobus tenuifolius*, Roth.

LINNÆAN SOCIETY.

Nov. 27.—Professor Don read a paper, illustrated by drawings, descriptive of a new genus of the order *Bignoniaceæ*, discovered by Capt. Alexander in the Great Namaqualand, in South Africa. It grows abundantly on arid Sandy soils, to the height of six feet, bearing luxuriant white flowers, and prickly leaves, and its stamens are from five to seven in number.—A communication was next read by Dr. Glodsky, of Van Dieman's Land, on a singular and nondescript species of *Lepidosperma* found in that country. It grows only in one or two remote vallies, and in one spot formed by a jungle extending nearly half a mile. It is bushy, and usually grows from five to ten feet in eight, and its leaves are as many feet long.

WORCESTERSHIRE NATURAL-HISTORY SOCIETY.

At a recent meeting of the Worcestershire Natural History Society, Mr. Jabez Allies minutely detailed the particulars of a discovery of various fragments of Roman sepulchral urns and pans in an extensive stratum of wood ashes, about four feet deep beneath the alluvial soil, in a pasture at Bow Farm, Ripple, which lies upon the Eastern bank of the Severn, and which spot is undoubtedly the site of Roman pottery-works, upon which are vestiges of a Roman camp. Mr. Allies

also described the very remarkable relics still existing of a Roman road from Bow Bridge, at the foot of Towbury Hill, to the Mythe Tute, near Tewkesbury, and also from near Severn Bank, for about two miles towards Pershore. He concluded his interesting paper with a summary of the accounts he had from time to time given to the Society of Roman stations, camps, and forts lately discovered, at intervals, all along the Eastern bank of the Severn from Ombersley to Ripple, and of Tute Hills, by which they were flanked, overlooked, and defended.

LIVERPOOL ROYAL INSTITUTION.

At the last general meeting of the proprietors of the above Institution, the following resolutions were passed:—That an annual subscription of £3 shall admit the subscriber and all the resident members of his family to all the lectures, and to the Museums and Galleries of the Institution.—£2 to admit the subscriber *only* to all the lectures, and himself and family to the Museums and Galleries.—£1 to admit the subscriber to the Museums and Galleries.

All subscribers have the privilege of introducing their friends (whether strangers or townspeople) to see the Institution, either personally or by note, and of taking tickets to the soirées, for themselves, families, and friends.

Heads of schools are admitted to the lectures, Museums, and Galleries, gratuitously, with their pupils, when three or more attend; the subscription for each pupil being £1 annually, and the ticket transferable in the school.

The morning courses of lectures, commencing at ten o'clock, are open only to proprietors, annual subscribers, and their friends—the latter on subscribing to the particular course, or on payment of one shilling for each lecture.

The evening courses, commencing at half-past seven, are open on the same terms to the public also.

The Museums and Galleries *are open to the public* on the first Monday in each month, from nine to four, *free of charge;* and at all other times, during the same hours, on the payment of one shilling.

Arrangements have been made for a course of lectures on German literature, by M. Migault, to commence on Tuesday, Jan. 22; on Acoustics, by Mr. Addams, of London, to commence Feb. 11; to be succeeded by courses on French literature by M. Jules Lefebvre; and on Italian literature, by M. Grimaldi. Further arrangements will depend on the support afforded by the public.

The soirées, which caused so much pleasure and intellectual gratification last Winter (see Vol. III., p. 123), have been resumed. The first was held on the 12th of December. The paper for the evening was "On the Footsteps discovered in the New Red Sandstone at Storeton-Hill Stone-quarry, Cheshire," by the Rev. Thomas Dwyer, M.A., and Mr. Cunningham. The paper was merely a full exposition of the facts brought under the notice of the Natural-History Society at

different times; illustrated by some excellent sections and drawings of the quarry by Mr. CUNNINGHAM, and by the lithographic drawings prepared by the Society, as well as by the different slabs and casts presented to the Museum of the Royal Institution, by the Natural-History Society.

The second soirée was held Dec. 12. The paper for the evening, "On the Solidification of Carbonic Acid Gas," by Dr. REYNOLDS. The third will take place on the 9th of January, and the last for the present season on the 13th of February.

The terms of admission are exceedingly moderate, being 10s. for a gentleman's ticket, and 5s. for a lady's ticket to the course. Strangers recommended by subscribers may obtain single tickets for half-a-crown. It is well to observe that the above price of admission merely defrays the expense of refreshments, and of lighting and warming the rooms, for which purpose a new apparatus has been put up, for warming the rooms with hot air. Many disappointments invariably occur, as the committee are regulated in the number of tickets they issue by the size of the lecture-room. The rooms of the Museum and Galleries would accommodate a greater number, but then dissatisfaction would ensue at not being able to procure a place in the lecture-room. Between five and six hundred tickets are issued.

ST. ANDREWS LITERARY AND PHILOSOPHICAL SOCIETY.

Nov. 30.—Lord WM. DOUGLAS, Pres., in the chair.—Present—Sir DAVID BREWSTER; Professors TENNANT, JACKSON, ANDERSON; Col. PLAYFAIR; Major PLAYFAIR; Provost WALLACE; Drs. HALDANE, BUIST, COOK, BRIGGS, MUDIE, THOMSON, GILLESPIE, SCOTT, GOVAN: Rev. S. LUMSDAINE; Mr. LYON, Mr. ARNOTT, Mr. J. GOODSIR, Mr. ADAMSON, Mr. COX, Mr. DEMPSTER, Mr. BUIST (Kirkton), Mr. WALLACE, Mr. SMITH, Mr. PATTULLO, Mr. MESSIEUX, Mr. GEO. BUIST, Mr. BERRIE, Mr. PAGE, Mr. W. BUIST, Mr. H. BUIST, &c. &c.

The Curator read a very handsome list of donations from the University Library and from several Members of the Society.

Lord MELVILLE, Capt. BROWN, and Mr. GREENHILL were elected honorary members; and several ordinary members were admitted.

The Secretary then read an extract of a letter from Dr. JOHN DAVY, in reference to the teeth of *Megalychthys*, found in Halbeath Parrot-coal, which had been put into his hands for analysis by Sir DAVID BREWSTER. It had been analysed by him, and nearly the same conclusions come to as those formerly arrived at by Dr. BRIGGS.

Mr. JOHN GOODSIR, of Anstruther, then laid before the meeting numerous specimens and drawings of fishes lately found in the Limestone and Shales of Corn-Ceres. Mr. GOODSIR very ably explained the nature of the specimens. The

fishes were of several kinds, all differing very widely from any of those described by Agassiz, but all of the Ganoidean or Enamelled-scaled kinds. Mr. Goodsir read an elaborate anatomical description of the peculiarities of these fishes. In all of these the vertebral column ranged along to the extremity of the upper edge of the tail, so that this consisted partly of articulated bones, and the integuments partly of radiated fin. In this fossil fishes differed from all known recent species. In the Pike a few caudal vertebræ ranged along the upper margin of the tail. A fossil fish had been discovered in Caithness, and described by Mr. Murchison as having a divided dorsal fin; these he, from this circumstance, designated *Diopteris*. Agassiz, however, was at first of opinion that the division of the fin was accidental, and might have been occasioned by the creature's struggles in death. On this ground he placed it in the genus *Catopteris*. On coming to London and examining the specimen itself, however, he saw reason to change his opinion, and restored to it the designation of *Diopteris*, in which the dorsal fin had a true natural division. The genus *Catopteris* was now therefore abandoned by Agassiz. Curiously enough, in one of the specimens presented, this structure was such that it filled up the gap here occasioned, and must be characterized as a Catopterous fish, thus restoring the supposed defective genus. Mr. Goodsir promised on some future occasion to give a more full and minute account of these fishes than at present. It has rarely, indeed, been our fortune to listen to what appeared to us a more clear, able, and minute paper than that of which, in the above, we have not even attempted an outline, but which was throughout marked by the sound sense, the laborious perseverance, minute and accurate anatomical knowledge, and unpresuming modesty by which its writer is so eminently characterised.

Sir D. Brewster expressed the great gratification which he had derived from listening to the admirable paper of Mr. Goodsir. He thought Mr. G. depreciated the importance of his discovery by restoring the designation *Catopteris*, which had been applied to an abandoned species, as this would still be associated in the minds of philosophers with the former description of Agassiz.

Mr. Goodsir said, the large dorsal fin was so eminently *generic* a character, that he saw no other name he could at present so well adopt.

Dr. Briggs moved, that the thanks of the Society be tendered to Mr. Goodsir for his researches, which motion we beg to second, on behalf of the natural-historical public in general.

Mr. George Buist, of Cupar, read a paper on the upheaved beaches which he had discovered to prevail all around the shores of Fife, from Wormitt Bay to Kinghorn, interrupted only where the destructible nature of the rock had permitted the sea once more "to regain its own," where they had been overblown by drift-sands, as at Tents-Muir and Pilmuir Links, or where the depth of the

primeval ocean had been such as to prevent the upheave from bringing the beach to the surface, merely by so much diminishing the depth of the sea at its base. The upheave was from five to twenty feet above high water-mark—the beach consisting of shells, Sea-worm, Gravel, and Sand, from one to five feet in thickness, and in some places, as betwixt the Guard-Bridge and St. Andrews, covering an area of above two square miles. It encircled in all a coast of seventy miles in length. Of this, from Crail to Dysart, the Gravel consisted chiefly of Chalk-flints —at Elie harbour exclusively so—yet the nearest known Chalk formation was Flambrough Head. Was it not probable from this that a Chalk formation under the bed of the ocean existed somewhere much nearer our shores than had heretofore been inspected?

Sir David Brewster expressed the extreme interest he felt in the subject, which was the very one towards the investigation of which geologists were chiefly directing attention. Dr. Darwin, who had acted as naturalist on board of her Majesty's ship *Beagle*, had laid the results of his observations on the appearance of Coral islands before the world, and had gone to the North of Scotland to examine the parallel roads or terraces in Glenroy, at a level of hundreds of feet above the sea. These he conceived to be the beaches of a former ocean. He was sure Dr. Darwin would derive much gratification from finding the investigation of the subject going on here with results so important. He had had much correspondence with Dr. Darwin on this subject, and hoped Mr. Buist would he present at the next meeting, when he should lay extracts from these letters before the Society. He asked Mr. Buist whether he did not think that beaches might be traced at a much higher level in Fife than he described?

Mr. Buist said he thought so most decidedly, and had no doubt of there being sufficient evidence in existence that the plateau on which St. Andrews was built was a beach of higher altitude. He understood that Mr. Lyell had some time since pointed out three terraces to the East of Dundee, all of which he considered to be beaches, though at the time he could find no shells. Shells he (Mr. B.) understood had subsequently been found in a pit-well at Taybank, in the uppermost beach, probably not less than 150 feet above the sea level; and again, in the second one, in a Clay-pit on Mr. Hunter's, of Blackness, property, about 60 feet up, and just behind Carnoustie. He spoke on these points, however, only from hearsay. The Dundee and Arbroath Railway completely split up the lowest beach, which was one bank of beautifully-arranged Gravel and shells, which he had very carefully examined. It corresponded with the lowest beach of the Fife shores. He had examined the upper terrace appearances betwixt Newport and Ferry-Port-on-Craig, but could not find sufficient evidence of their being beaches.

Mr. Page said that he had observed the same beds of shells, Gravel, and Sand, as had been described by Mr. Buist. On advancing up the Firth, this was

exchanged for fine Clay and silty river deposits. He could not agree with the conclusion come to, that this was occasioned by an upheave, but considered it, on the other hand, as partly caused by an invasion and recess of the ocean. We had historical evidence of the overflow of the sea in the time of ALEXANDER II., which then swept over the low coasts of Scotland, and destroyed many villages. To this era he was disposed to assign the formation. He had found in these Gravel-beds that the shells all corresponded with those still existing in the adjoining seas; the minutest groovings of most of them, and the delicate operculæ of some of them, were still entire, and he could not conceive how this should be the case had they for many years been washed by the sea, and tossed about on the beach. He (Mr. P.) considered that the whole phenomena might have been brought about by a very temporary immersion of, perhaps, a few days only. As to some of the higher beds of Gravel and Sand, with shells, which had been noticed, any one who had observed the agency of the wind on Sandy downs would easily account for them. On the Sand-hill at Whinnyhill, for example, large tracts were covered with matter, which caused them to seem as if covered with a sea beach, which were, in fact, merely the drift from the adjoining banks. Mr. PAGE here illustrated by diagrams how the various appearances might be accounted for.

Mr. BUIST said that there were two difficulties in Mr. PAGE's doctrine he could not get over. First, if the beaches described were occasioned by an overflow of the sea rather than an uprise in the shore, whence arose the inequalities in level found to prevail in it? The second was, how were the ancient water-worn cliffs formed found so generally to border the beach on the landward side, and which at Crail Links were 80 yards, and at Strathtyrum nearly a mile, from the present sea-shore? Could such masses of rock as this be washed away by a temporary submergence? He should also have a difficulty in reference to the mass of the beach itself, which in many places was upwards of five, and at Largo Bay nearly ten, feet in thickness.

Some further discussion on this point ensued, in which Mr. PAGE very ingeniously defended his own views of the matter. Sir DAVID BREWSTER and Mr. JOHN GOODSIR argued in favour of those of Mr. BUIST.

Mr. PAGE then proceeded to give some account of elastic mineral pitch, or mineral Caoutchouc, which he had discovered in mountain or Carboniferous Limestone at Lochhead, six miles North from Burnt island. This remarkable substance had heretofore been considered very rare, and was only to be found in some of the mines in Germany and Derbyshire. He found the pitch in great abundance in this locality, which had heretofore been utterly overlooked by geologists. The specimen presented, though found more than six months ago,

still preserved its elasticity. It was full of elongated vesicles, as if occasioned by the extrusion of bubbles of aëriform matter. Here he also found specimens of the remarkable mineral called "Mellite," the only known locality of which hitherto was Astern in Thuringia. It was of a bright honey colour—its crystals prismatic, and very well defined.

Sir David Brewster expressed his surprise at the last-named discovery. Mellite was an extraordinarily rare and very singular mineral. Its only characteristic distinction, as compared with Amber, was its possessing a crystalline structure. Was Mr. Page quite sure that he had fallen into no mistake?

Mr. Page said that he was unfortunately unable to exhibit the specimen, which was neither his property, nor now in his possession, but which was very well marked, and distinctly crystallized.

At the conclusion, Sir David Brewster announced that at the next meeting he would read extracts from the letters of Dr. Darwin on upheaved beaches.—Mr. Page said he should then have some remarks to make on the same subject.

Mr. Page also announced that at the next meeting he would read a paper on the appearance of the New Red Sandstone, or Super-carboniferous system in Fife.

The next meeting was fixed for the 7th of January, or Hansel Monday, when, as will be seen from the above, there is abundant promise of interesting discussion.

The Museum now presents a very interesting and attractive spectacle. The room is fitted up with a suite of plain wooden tables and moveable benches. The former of these are already covered with a formidable variety of minerals (including the rich and generous donation of forty pounds worth from Mr. M'Vicar), fossils, organisms, and rock specimens. The walls are covered with glass cases, already filled with stuffed specimens; while fine Indian and South-Sea-Island rarities are dispersed in various parts of the room. The President's chair—before which there is a table for the reception of drawings, books, &c., and the use of the Secretary (for the meetings of the Society now take place in the Museum)—is decorated with a splendid Indian fan leaf, and a black board for Chalk diagrams is over the mantel-piece. Unless the county Society exerts herself, she will find a formidable rival for fame in her St. Andrews sister.

REVIEWS OF NEW PUBLICATIONS.

Catalogue of the British Natural Orders and Genera of Plants; arranged according to the Natural System of De Candolle (extracted from Dr. D. C. Macreight's *Manual of British Botany*, London, 1837), together with the whole of the Linnæan Classes and Orders (from Sir W. J. Hooker's *British Flora*, 4th edit., 1838). Intended to serve as Labels for arranging British Collections either according to the Natural or Artificial Systems. Printed by Order of the Council of the Botanical Society of London, November, 1838. Arranged under the Superintendence of Daniel Cooper, A.L.S., Curator, &c.

The names are very well and clearly printed, on one side of a large single sheet, which may travel by post as such. It appears correctly compiled, and we need not comment on its usefulness. The botanist who loves order and neatness in his herbarium will doubtless in future adopt these labels.

The Weather Almanac for the Year 1839. By P. Murphy, Esq., &c. &c. London: *Whittaker & Co.*, Ave-Maria-Lane. 12mo.

Last year (Vol. III., p. 163) we noticed this Almanac at some length, premising that the sale of the work rendering it needless for the author to transmit gratuitous copies to Editors, we were under the dire necessity of purchasing a copy for reviewing purposes. This time we have received a copy "with the author's compts.," though—shall we say fortunately, or the contrary?—too late to prevent our having recourse to our bookseller for a duplicate. However, it is marked "2nd edit.;" and we feel convinced that a single "lucky hit" in the present month would again cause a run for the work. In a small town where there are several other booksellers, nearly thirty copies have already been issued by one house alone. That an extensive circulation was fully calculated upon by speculators of various kinds, is, moreover, evident from the number of advertisements in the present number.

This year's *Weather Almanac* contains much new matter; but the only part particularly interesting to ourselves is the prophetic portion. Should Mr. Murphy again obtain similar success through January alone, we shall seriously suggest the propriety of his henceforth publishing "Weather Almanacs for the Month of January." Although he does not promise us so steady a continuance of frost, still, supposing him tolerably correct, there will be abundant sport for the skater. The lowest degree of Winter temperature is gazetted for Wednesday, Jan. 9.

There are now several weather-prophets in the field, among whom we may mention Lieut. Morrison, of Cheltenham, Mr. G. Sugden, of Howden, and Mr. W. J. Simmonite, of Sheffield; but not one has commanded the attention bestowed on Mr. Murphy, having, in fact, far inferior claims on the public.

The belief appears to prevail very generally that Mr. Murphy was right but *once* last year, viz., on Jan. 20. This is incorrect; for there was not one remarkable error throughout the month. We have in our possession the actual weather as noticed at Campsall, and also at Cheltenham,* in juxtaposition with Mr. Murphy's prognostications from January to December, 1838, but can discover no great success in any month save and except January.

Many of our subscribers expressed surprize at our noticing Mr. Murphy last year, and probably their amazement will be considerably increased this season. Further, as soon as ever our author's success became a little less visible, almost every publication fell off from his cause—amongst others, some which had been foremost in his praise, now turned round and abused the public for having ever patronised the "impostor"! In 1838 we expressed our opinion that Mr. Murphy had arrived at some principle which enabled him, however imperfectly, to prophecy the state of the weather. That opinion remains unaltered in 1839; but when it is satisfactorily proved, by fair experiments, that such is not the case, we shall be the first candidly and freely to confess our error. We support that opinion not because it is ours, but it is ours because we conceive it to be founded on truth.

Lastly, let it go forth into the world that "*L'application de ce calendrière a vivement intéressé M. Arago.*" We need not add another word. Our exculpation—supposing one required—is complete.

LITERARY INTELLIGENCE.

We have much pleasure in announcing that Mr. John Bohn, bookseller, of 17, Henrietta-Street, Covent-Garden, London, has on sale a copy of the late Col. Montagu's "*Ornithological Dictionary*, or Alphabetical Synopsis of British Birds," 3 vols., 8vo., calf-gilt, with 25 plates. We have hunted for years for a copy of this scarce, valuable, and most interesting work, in town and country, without success, until a kind friend presented us with it. Although we run the risk of being charged for an advertisement, we shall mention that the price is £3, 13s. 6d.—The 25th No. of the *Entomological Magazine* appeared in Novem-

* Recorded by Mr. Samuel Moss, in the *Cheltenham Looker-On*.

ber, and the work is announced to be "complete," in 5 vols. We regret this circumstance, and still more the probable cause of it, although we had long anticipated it.—Mr. Beale has published a second edition of his *Natural History of the Sperm Whale*. Though dated 1839, we have perused its contents ere the "old year" is entirely spent. It will be reviewed at a future opportunity.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Anecdote of a Robin Redbreast (*Rubecula familiaris*).—Among the many traits of character of the Robin, it is well known that its relish for the society of Man in the shrill blasts of Winter stands prominent. A remarkable instance of this occurred in St. Andrews some time since. A lady residing in the suburbs observing from time to time poor Robin hopping about her window, apparently soliciting the friendly shelter of some one, was induced to open the window, when Robin quickly accepted the proferred hospitality, entering and devouring some food most greedily, and seemingly well pleased with its quarters. It perched in the room during the night, and was allowed to escape next morning. Next night it again made its appearance, and again received a welcome. Night after night he returned to his quarters during the Winter; and, strange to say, he invariably heralded his arrival to his "lady love" by tapping on the window.—George Tod [no place is named in the date], *March* 1, 1838.

Occurrence of *Geotrupes stercorarius* in December.—I was not a little surprised on the first of this month, when on the road between this place and St. Andrews, about the middle of the day, to see a specimen of *Geotrupes stercorarius*, an insect familiar to almost every one under the common name of Dor-beetle, and whose "drowsy hum" falls so often on our ears during the evenings of Autumn. It was flying about with its usual heavy flight, but I could not distinguish anything like the humming noise. Indeed I have generally remarked that this humming sound is not produced during its diurnal flight. It was rather a mild day, but without sunshine, and there were many other insects, both *Coleoptera* (*Aphodius*) and *Diptera*, sporting about. My brother informs me that he saw a specimen of the Dor-beetle two or three days previous to the 1st of Dec., and which, in attempting to secure, he drove into the burn.—Henry Buist, *Law Park Cottage, near St. Andrew's, Dec.* 11, 1838.

Composition for repairing Entomologial Specimens.—The following composition is used by Andrew Melly, Esq., to repair damaged insects, and has

been found highly useful by several entomologists in Liverpool, to whom Mr. Melly has given the recipe. I trust, therefore, that I need make no apology for sending it for insertion in *The Naturalist.*

½ oz. black wafers, pounded as fine as possible
½ oz. gum arabic
¼ oz. glass, finely powdered.

The mixture to be moistened to the consistence of thin paste, when wanted for use.—T. B. Hall, *Woodside, Cheshire, Nov.* 11, 1838.

Voracity of the Stoat.—As some gentlemen of this county were shooting last week, one of the party shot a Stoat carrying off a full grown Rabbit; which we need hardly say was superior in size and weight to itself.—*Glamorgan Guardian, Oct.*, 1838.

Animal Intelligence.—As some individuals were out hunting vermin the other day, in the neighbourhood of Carlisle, they discovered the nest of a Fitchet, which contained several young. Near the nest was a quantity of live Frogs, each with one of its legs broken, for the purpose, it appears, of preventing it from escaping, a method that these sagacious animals adopt to preserve food always fresh for their young.—*Gloucester Chronicle, Oct.* 20, 1838.

Chesterfield invaded by Partridges.—A covey of Partridges, fifteen in number, were found in Salter-gate, Chesterfield, opposite the Jug and Glass, on Thursday night; three were caught alive by a shoemaker, and two by an excavator; the others escaped. One would think they sought refuge among us from the attacks made upon their order by sportsmen, of every rank, who appear at present greatly to enjoy their favourite diversion.—*Derbyshire Courier, Oct.* 13, 1838.

A Cat Case in Chancery.—In the Vice-Chancellor's Court, on Saturday week, Mr. Bethell appeared in support of a petition presented by residuary legatees claiming under the will of a maiden lady named Katherine Barfoot, praying to have certain sums of stock transferred into the name of the Accountant-general to the credit of the cause. Among the numerous bequests contained in the will of the testatrix, was an annuity of £10, secured on a sum of stock, "to provide a suitable income for the life of a favourite tom-Cat, named Blucher."—(Laughter.) The dividends had been regularly appropriated from time to time by the trustees to the maintenance and support of the annuitant until the period of his death, which occurred a few days ago. The annuity, therefore, having fallen in, the present petition sought to have the stock transferred. His honour inquired, what evidence the learned counsel had to offer to the court of the annuitant's death?—(A laugh.) Mr. Bethell said, a certificate of the burial of the deceased, which was the usual evidence required by the court, could not be produced; but he trusted, under the peculiar circumstances of the case, his honour would consider an affidavit of the fact by a disinterested party, sufficient evidence

that the annuitant was dead. The Registrar (Mr. Colville) suggested that the affidavit would not justify the Court in making the order, inasmuch as it only deposed to the fact of a single death, whereas a Cat was proverbially known to have nine lives.—(Laughter.) It was also a very nice question, whether the language of the will did not create a tenancy in tail. The next of kin of the intestate were also said to be extremely numerous, and it was not alleged that any of them had been personally served with the petition.—(Laughter). Mr. Jacob thought that the Court ought to proceed to adjudicate with extreme caution on a case supported by such slender evidence, and before the authorities had been looked into. He remembered a case before Sir John Leach, which was all fours with the present.—(A laugh.) The Vice-Chancellor felt the weight of the first objection taken by the Registrar; but observed, that the Cat, having once died, must be held for ever *civiliter mortuus*, and not entitled to greater privileges than a Christian.—(Much laughter).—*May* 7.

Singular Fish.—Mr. Baker, fishmonger, of York, has now in his possession an Opah, or King-fish, which is exceedingly rare and beautiful, only a few examples being recorded of its having been taken in Great Britain. This fish was caught on the Dogger Banks, near Burlington, on Thursday last, and was secured by a harpoon, after eight days' labour. It is about five feet long, fifteen or sixteen inches thick, and weighs twelve pounds. The Opah is a native of the Eastern seas, and is esteemed by the Japanese as the peculiar emblem of happiness, because it is sacred to Neptune. We copy the following description from Mr. Yarrell's *History of British Fishes:*—"The upper part of the back and sides are of a rich green, reflecting both purple and gold in different lights, passing into yellowish-green below; above and beneath the lateral lines are various round yellowish-white spots, from which the fish received the name of *Luna;* the irides are scarlet, all the fins bright vermilion." It is dappled like the John Dorey, and is eaten by the Japanese and Greeks.—*Sheffield Iris, Nov.* 20, 1838.

Reinstatement of the Wood Grouse in Britain.—The Capercailzie, or Wood Grouse, which Lord Breadalbane turned out in his forests during the past and present Summer have, says the *Morning Post*, bred in those wilds. There were 44 altogether, about two-thirds of which were females, and all were old and seasoned birds. This splendid collection was made in Sweden, with vast trouble and at great expense, by Mr. Lloyd. T. Fowell Buxton, Esq., late M.P. for Weymouth, presented them to the Marquis. In addition to the Capercailzie now at large in the Highlands, Mr. Lloyd, we understand, sent at the same time three others to the Dutchess of Athol, and fifteen to the Earl of Derby.—This is a very interesting circumstance.—Ed.

Extraordinary Canine Sagacity.—The following fact, which we lately witnessed while passing in one of the steam-boats down the Clyde, so far exceeds

any ordinary instance of sagacity in the Dog, that one is almost tempted to pronounce it a real case of ratiocination.—As the steamer approached, a little Dog, seemingly a terrier, was seen to issue from a bothy used by the Salmon fishermen, and waded into the water till nothing was observed but the animal's nose. It immediately returned, however, with the end of the rope to which the net-floats are fixed, which it carried a considerable distance upon the ground, where it carefully left it high and dry. Now, as every one may know, just before the advance of a steam-boat in a narrow river, the water, owing to the action of the paddles, suddenly subsides, and as suddenly again rushes in violent waves above the water-mark. Had not the Dog known this, and taken proper precaution, the rope and floats would to a certainty have been carried off. This curious incident elicited the strongest admiration from all the passengers.—*Correspondent of the Scotsman*, *Aug.* 1838.

Experiments on the Electric-eel.—Some highly interesting facts will shortly be made public, the result of a series of experiments upon the living specimens of the Electric-eel (*Gymnotus electricus*), which was brought to this country from the Amazon a few months since. On Monday last, Dr. Faraday, in the presence of Professors Daniell, Owen, Wheatstone, and others, succeeded in obtaining from it the electric spark; and one of the party, who had the temerity to grasp the creature with both hands, had his curiosity satisfied with a shock, which, if he were before incredulous, must have most effectually removed all doubts as to the electric properties of the animal. The electricity appears to be of the most intense character, being communicated by simply immersing the hands in the vessel of water containing the Eel. By one shock not only was the needle of a galvanometer deflected, but chemical action and magnetic induction obtained. When this ichthyological rarity was first exhibited, at a meeting of the Zoological Society, by the gentleman who brought it over, and in whose possession it had then been for a considerable time, he stated that it ought to be kept entirely without food. Judging, however, from the very unceremonious manner in which we saw an intruder in the shape of a live Gudgeon disposed of, we should almost be inclined to question the philosophy of his recommendation.—*Athenæum*, *Oct.* 27, 1838.

Sense of Hearing in Fish.—In order to ascertain the truth of a common assertion, that fish can hear voices in conversation on the banks of a stream, my friends and myself selected, for close observation, a Trout poised about six inches deep in the water, while a third, who was situated behind the fishing-house, diametrically opposite to the side where the fish lay, fired off one barrel of his gun. The possibility of the flash being seen by the fish was thus wholly prevented, and the report produced not the slightest apparent effect upon him. The second barrel was then fired; still he remained immovable, evincing not the

slightest symptom of having heard the report. This experiment was afterwards often repeated, and precisely similar results were invariably obtained; neither could I or others ever awaken symptoms of alarm in the fishes near the hut by shouting to them in the loudest tones, although our distance from them sometimes did not exceed six feet. It is possible that fishes may be in some manner affected by vibrations communicated to their element, either directly or by the intervention of aerial pulsation, although it is not clearly proved that they possess organs appropriated exclusively to the purpose of hearing.—Ronald's *Fly Fisher's Entomology.*

Phosphoric Lights in the higher Animals.—Professor Müller, in his *Handbuch der Physiologie des Menschen*, says, "*Unter den höheren Thieren kennt man kein Leuchten*," &c. This, however, is incorrect, since phosphoric lights are noticed at night in the breast of the Bittern, and we believe that some fishes exhibit a similar phenomenon.—Ed.

Capture of the Ca'ing Whale.—On Friday, the inhabitants of Fort George were thrown into a state of excitement by the unwonted appearance of a monster of the deep, which had got into shallow water in Campbelton-Bay, and was writhing his unwieldly proportions in order to extricate himself. Boats from Campbelton were immediately under weigh, and directing their course to the scene of attraction; but a little bark from the garrison, well manned and armed with rifles, &c., was first on the spot, and succeeded, after desperate efforts and imminent risk, in throwing a noose over his tail and towing the monster to the beach of the fort; two of the visitors bestrided his huge body as he was dragged slowly along. The animal, which measured 20 feet 7 inches in length, and 11 feet 5 inches in circumference, was a Grampus (*Delphinus globiceps* of Cuvier, and *D. deductor* of Scoresby).—*Salisbury Herald, Oct.* 13, 1838.—[We conclude the animal here alluded to is the Ca'ing Whale, *Delphinus melas*, Traill. —Ed.]

Nail swallowed by a Cow—singular Result.—As Mrs. Kinder, of Toadhole, was milking one of her Cows a short time since, she was astonished at observing a substance of some kind protruding from the side of the animal. On examination this proved to be piece of a spike-shaped iron. Mrs. Kinder immediately informed her husband, who had to use considerable force to effect its removal. It proved, on extraction, to be a common mop-nail, of the length of at least six inches, and proportionably thick. It was crushed, and the head in particular seemed wasted by oxidization, but was still as large as a sixpence. Mr. Kinder remembered three years ago being told that the Cow had eaten the head of a mop, but he took no further notice of the circumstance, and the beast to all appearance has been in good health ever since.—*Derbyshire Courier, June*, 1838.

Zoological Lecture at Thorne.—Mr. Edwin Lankester delivered a lecture on Zoology at Thorne, Yorkshire, on the 14th of December.—Ed.

Singular Instance of Fidelity in the Feathered Tribe.—About a month ago, iron gratings were repaired so as completely to prevent Jackdaws from entering the chimnies of Kirkbean Manse. Ever since that time, unwonted noises have been occasionally heard in the stillness of the night; and during the day nondescript objects have astonished the inmates by emerging from the grating and suddenly disappearing. In short, in times not long gone by, much less would have afforded foundation for a very creditable ghost-story. The truth, however, unhappily for the interest of the narrative, was at length surmised; and upon the removal of the grating, a Jackdaw was taken from one of the vents, so little injured by his long and dreary imprisonment, that he shewed flight in very good style from his deliverer, and flew off with his wonted vigour, having, no doubt, been well supplied with meat and drink by his partner during the whole of his captivity. The notes with which he hailed his restoration to liberty were thought much to resemble the well-known air—"*We'll gang nae mair to yon town.*"—*Dumfries Herald*, *July*, 1838.

Prolific Canaries.—I have in my possession a pair of Canary-birds which have already this season produced, in the short space of two months and six days, seventeen young ones, sixteen of which are now living, and the youngest a fortnight old. Perhaps this is the greatest number of young birds ever produced by one female Canary in so short a time; and what is still more rare is, that twelve of the young ones were all hatched in one month and two days, say from the 25th of May to the 27th of June.—*Correspondent of the Liverpool Mercury*, *July* 13, 1838.—[The Editor of the *Mercury* states that he is in possession of the name and address of his correspondent.—Ed. *Nat.*]

Persia, the Place for Entomologists.—Then we had the insects, hideous and fearful of aspect—countless in multitudes, to contend with; Flies of every sort and size, Slaters of extraordinary plumpness, Beetles as large as Humming-birds, Ants and Spiders in myriads, with clouds of Grasshoppers, assaulted us in every possible way. Attracted by the lights at night, they entered the open tents, jumping into our sherbet and pillaws at dinner, drowning themselves in our tea, and entering our very mouths as we opened them to drink it. They crawled all over us in thousands, and made their abode in our garments. But worst of all was that enormous Spider to which I alluded just now, and which in Persia is called the *Rooteil* or *Shutoorzeen* (Camel-stinger). Some of these are yellow, some black, and of an immense size—perhaps, including legs, not less than five inches of spread, and, the latter particularly, hirsute and hideous of aspect. Now as the carpets of the tents are spread on the bare ground, there is no manner of preventing the ingress and egress of these monsters, and we were frequently more

surprised than pleased by the sudden approach of a formidable *Rooteil* galloping in upon us, or perhaps over us. One morning I had just dressed myself, and was putting on my boots preparatory to riding out, when I became aware of a strange scratching *within* my wide Persian trowsers. I gave a convulsive stamp or two with my foot, when down fell a thumping fellow who had unceremoniously crawled into that forbidden region. You know my abhorrence to the whole race of Spiders, and can conceive the shudder with which I viewed the intruder, whom I valiantly severed in two with my sword, the only weapon within reach, as he was making off at speed. You shall see his picture, which was taken on the spot immediately after his execution. But I had not done with Spiders for that day, for while seated at dinner, I felt something like a Crab scrambling up my neck; and, on putting up my hand, pulled down another of these amiable reptiles, which fell upon the cloth before me:—him I finished with my knife.—Fraser's *Winter Journey.*

Insects of the Gold Coast.—A new species of the *Goliathus* Beetle is an object of commercial as well as entomological value, as much as £50 having been given for a specimen. Formerly, £20 to £25 was an ordinary price.—*Report of the British Association at Newcastle*, 1838.

Ceropales variegatus.—I was present when the Rev. G. T. Rudd took a pair of these insects on the heath by Parley Copse, Dorsetshire, Aug. 14, 1835, and saw another on Catherine Hill, near Christchurch, Hampshire, two days afterwards. There is a single specimen in the British Museum, taken by the late Dr. Leach, in Devonshire (?) My net was broken at the time. Mr. Stephens formerly named my specimens of *C. maculatus* as *this*, which led me into many errors.—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

Adoption of a Foal by a Cow.—One of the brood blood mares, the property of the Marquis of Westminster, at present located at Moor Park, was taken very ill after dropping a foal; and, strange to say, the young one has been adopted by a milch cow, which renders to it all the offices of a maternal parent. —*Derby Reporter, May* 17, 1838.

Peregrine Falcon Shot at Norwich.—On Tuesday last, a splendid female specimen of that rare bird the Peregrine Falcon was shot by Mr. Walter Roper, of this city, whilst in the act of stooping at some Pigeons, and fell on the Duke's Palace bridge. An almost unprecedented occurrence for a bird of retired habits like the Peregrine Falcon, and so rare in Norfolk, to have been killed in the centre of a large city. It has been stuffed by Mr. Johnson, animal-preserver, and is now in his possession.—*Norwich Mercury, Sept.* 1838.

Longtailed Tit (*Parus caudatus*) on the Sea-shore.—I have known this beautiful little species and ingenious feathered architect, during the severity of

Winter, leave the inland woods, its usual haunts, and approach the sea-side in small flocks.—Patrick Hawkridge, *Scarborough, Aug.* 1837.

Singular Variety of the Magpie.—A remarkable specimen of the Magpie was lately shot at Wath-upon-Dearne, by Wm. Addy. It was bred at Newhill Hall, the seat of John Payne, Esq., and is about eleven inches long, and stands eleven inches high. It is of a beautiful bright fawn-colour on the head, breast, wings, thighs, and tail, shaded to a bright brown on the dark feathers of the wing-coverts; and the belly is of a cinereous white. The bill, legs, feet and claws are brownish-black, which another year would, no doubt, have made beautifully black; and it is really to be regretted that its death was occasioned by its capture. —*Doncaster Gazette, Oct.*, 1838.

A Lion Scared by a Dreamer.—It happened on one occasion, a short time previous to our arrival amongst this tribe, that a young Boschman, in hunting a troop of Zebras, had just succeeded in wounding one of them with an arrow, when a Lion sprang out of an opposite thicket, and showed a decided inclination to dispute the prize with the hunter. The Boschman luckily being near a tree, dropped his arms, and climbed for safety, without a moment's delay, to an upper branch. The Lion having allowed the wounded Zebra to pass on, now turned his whole attention towards the perching huntsman, and walking round and round the tree, he now and then growled, and looked up at him rather unpleasantly. At length the Lion lay down at the foot of the tree, and kept watch all night. Towards morning sleep overcame the hitherto watchful Boschman, and he dreamt that he had fallen into the Lion's mouth. Starting from the effects of his dream, he lost his seat, and tumbling from the high branch on which he had been reposing, came squash down upon the Lion's ribs. The monster not being at all prepared for assaults of this description, bolted off with a tremendous roar, and the Boschman lost no time in taking to his heels in the opposite direction, scarcely believing the evidence of his senses.—Sir James Alexander's *Discoveries in Southern Africa.*

BOTANY.

Botanical Lectures at Cheltenham.—Mr. Edwin Lees delivered three lectures on Botany, in December, at the Cheltenham Literary and Philosophical Institution. We shall publish an account of them next month.—Ed.

Cerastium arvense.—This plant has been observed this year, about the beginning of June, pretty abundantly, among the hedge-roots near the entrance to Lathrow, on the West side of the road between Milnathurt and Kinross. In England it is proverbially common, but it has not been detected generally in Scotland, for in Hooker's *Flora Scotica* only three stations are indicated—Kelso, Guil-

lon Links, and Forfar. This pretty species is readily distinguished from the other more common and lowland Mouse-ear Chickweeds, by its large white flowers.—*Fifeshire Journal, July* 19, 1838, *communicated by Mr. Henry Buist, Law Park, near St. Andrews.*

The Wonders of Horticulture.—Innumerable are the advantages which mankind have derived from the horticulturists. Few would suppose that the Peach (from which branched the Nectarine) had its origin in the Almond; or that the Shaddock, the Citron, the Orange, and the Lemon, proceeded from the diminutive wild Lime. That favourite edible, Celery, springs from a rank and acrid root, denominated Small-age, which grows "on all sides of ditches, and in the neighbourhood of the sea." The Hazlenut was the ancestor of the Filbert and the Cob-nut, while the luscious Plum can claim no higher a source than a Sloe. From the sour Crab issues the Golden-pippin; and the Pear and Cherry originally grew in the forest. The garden Asparagus, which grows, "though not very commonly, in stony or gravelly situations near the sea, when growing spontaneously, is a diminutive plant, and none, indeed, but a practised eye, examining into the species which is reared by artificial culture, can discern a resemblance." Wondrous to relate, the Cauliflower (of which Brocoli is a sub-variety,) is derived, together with the Cabbage, from the Colewort; a plant in its natural state, of scanty leaves, not weighing altogether half an ounce. *Crambe maritima*, which is found wild adjacent to the sea, has been improved into Sea-kale; the invaluable Potatoe is the offspring of a bitter American root, of spontaneous growth; and the all-tempting Pine-apple descends from a fruit which "in foreign climates grows wild by the sides of rivulets, and under the shade of lofty trees."—*Gardener's Gazette.*

Charms of Flowers.—Who would wish to live without flowers? Where would the poet fly for his images of beauty, if they were to perish for ever? Are they not the emblems of loveliness and innocence—the living types of all that is pleasing and graceful? We compare young lips to the Rose, and the white brow to the radiant Lily; the winning eye gathers its glow from the Violet, and a sweet voice is like a breeze kissing its way through flowers. We hang delicate blossoms on the silken ringlets of the young bride, and strew her path with fragrant bells when she leaves the church. We place them around the marble face of the dead in the narrow coffin, and they become symbols of our affections—pleasures remembered and hopes faded, wishes flown and scenes cherished, the more that they can never return. Still we look to the far-off Spring in other valleys—to the eternal Summer beyond the grave when the flowers which have faded shall again bloom in starry fields, where no rude Winter can intrude. They come upon us in Spring like the recollections of a dream, which hovered above us in sleep, peopled with shadowy beauties and pure delights, fancy broidered. Sweet flowers! that

bring before our eyes scenes of childhood—faces remembered in youth, when love was a stranger to himself! The Mossy bank by the way side, where we so often sat for hours, drinking in the beauty of the Primrose with our eyes—the sheltered gem, darkly green, filled with the perfume of Violets, that shone in their intense blue, like another sky spread upon the earth—the laughter of merry voices—the sweet song of the maiden—the downcast eye, the spreading blush, the kiss, ashamed at its own sound—are all brought back to memory by a flower.

GEOLOGY.

Singular Discovery at Lincoln.—The remains of former days ever and anon are met with in this ancient city, and astonish the moderns with their ghostly resuscitations of former grandeur. On Saturday last, Mr. Gresham (Above-hill) commenced enlarging his cellar, as he supposed, by penetrating the stone-work which closed up an old arch that formed one side of the place. The cellar is itself a great curiosity, being about twenty feet deep in the earth, and having many groinings and pointed arches; probably forming part of some ecclesiastical edifice. The old arch, above alluded to, was partly buried in the floor of this cellar; and Mr. Gresham supposed that by breaking down the stone-work which closed it up, he should open some collateral archway. When a few stones were taken down, a very different thing from that which had been expected, was discovered; a subterraneous passage was disclosed, of extraordinary extent and careful workmanship. It passes from the arched cellar of Mr. Gresham, in a direction towards the ancient Roman Southport; but probably may turn or terminate before it arrives at that outlet. It is five feet high, four feet in width, formed of capital masonry, with dressed stones carefully worked. It is covered in flat, with huge slabs of stone; and seems far too well executed to be a sewer. There are apertures only fourteen inches square, going off at right angles, horizontal from the main passage, and these lateral shafts appear to extend a considerable distance under the street and houses. The main passage is now cleared to the extent of 50 feet, and Mr. Gresham, in the true spirit of research, is determined to go as far as it continues, which to all appearance may be a quarter of a mile or more. Conjecture is at work to explain what might have been the purpose of this driftway: some suppose it to be a Roman secret passage, whereby to get beyond the walls. Others think it to be a subterraneous communication between adjacent religious establishments. A fragment of an earthern vessel was found amongst the rubbish, and some bones and teeth, but not in sufficient amount to lead to the idea that these were vaults for the deposit of the dead, although its aspect is such as would serve any modern Mrs. Ratcliffe with ample horrors for one of her most gloomy romances.—*Star in the East, July* 21, 1838.

Hewett C. Watton.

Lith.ª for Neville Woods Naturalist.

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THE NATURALIST.

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STATEMENT OF THE CLAIMS OF *Papilio podalirius* TO RANK AS A BRITISH INSECT.

By Peter Rylands, Esq.

The letter on this subject which appeared in *The Naturalist* for October (p. 24) was written with a view of eliciting further information, and it has answered this object to my entire satisfaction. In an especial manner are my thanks due to J. C. Dale, Esq., A.M., F.L.S., who has kindly furnished me with facts which, I have no doubt, will convince any *unbiassed** person that *podalirius* ought to be entered in the British Fauna.

I shall proceed to recapitulate :—

I.—The cases in which it *may* be doubted that *P. podalirius* occurred, but which, taken conjointly, constitute far from despicable evidence.

1. Berkenhout, who states in his *Synopsis*, respecting this Butterfly, that it is "rare in woods." In elucidation of this remark Mr. Haworth observes, that Dr. B. might *probably* have possessed this species, "because I have heard of his giving a high price for a *rare Swallow-tail* said to be taken in Cambridgeshire, which was probably the identical specimen of *podalirius* that he described in his *Synopsis of the Nat. Hist. of Great Britain*, and which he there says to be 'rare in woods.'" (Haworth, Pref., p. xxvii.)

2. Mr. Rippon.—Mr. Haworth remarks that "an ingenious practical aurelian friend (Mr. Rippon, of York) has informed me that he took *two sorts of Swallow-tailed Papilios*, near Beverley, in Yorkshire, twenty-five years ago (1778 ?), but no specimens of them are now extant; a fire which unfortunately destroyed great part of his property having consumed them likewise. Now as we have only two Swallow-tailed species in Great Britain, one of the above *in all probability* was *podalirius*. I know *machaon* breeds near Beverley yet, &c." (Haworth, *loc. cit.*)

3. Howard Sims.—"Aug. 24, 1810. Howard Sims (son of Dr. Sims) is *certain* he saw *P. podalirius* this day about twelve o'clock on the road to Salt-

* It may appear strange speaking of *bias* in such a connection, and yet the conduct of certain parties fully warrants the use of the term.

house." (CURTIS, MSS.) "Mr. HAWORTH also told me that H. SIMS struck at it with his forceps, and could have taken it with another net." (DALE, MSS.)

4. J. C. DALE, Esq., A.M.—"I *might* have been deceived, but *I am fully persuaded* I saw a specimen of *podalirius* alive near Eltysley, Cambs., settled on some Rushes, and half expanded, facing the rising sun." (July, 1818).—(DALE in letter to PETER RYLANDS.)

5. B. STANDISH.—"That Swallow-tail that I saw last Summer at Richmond Park was seen by the same person that was with me when I saw it. He saw it nearly in the same spot, and it took nearly the same direction as it did last Summer, which was about Sept. 20.—I cannot think but what it must be the *scarce one*, for *I am sure* it was *not* the common one." (STANDISH in letter to J. C. DALE, Esq., dated Oct. 11, 1820.)

6. Rev. Dr. ABBOTT.—Mr. HAWORTH told Mr. DALE that "Dr. ABBOTT had informed him by letter of his having *seen podalirius two* or *three* times" previous to the capture of it hereafter mentioned.

7. Rev. F. W. HOPE, F.R.S.—"At Netley *podalirius* was again on the wing; *I saw it distinctly* settle on a Peach, and was in quest of them two days without success." (HOPE in letter to J. C. DALE, Esq., dated Feb. 10, 1829.)

8. Mr. ALLIS's specimens. (see *Naturalist*, Vol. II., p. 38.)

I shall now proceed to the second division of evidence, which must of course be deemed conclusive if the *witnesses* are trust-worthy, viz :—

II.—Cases in which *P. podalirius* is stated to *have been captured* in Great Britain.

(1.) Rev. F. W. HOPE, F.R.S.—"My own successes have far out-run my expectations, and it will be a piece of news to inform you that *I have captured* the long-desired and much-doubted *P. podalirius;* since then I have seen another on the wing, but could not obtain it after toiling half a day." (HOPE in letter to J. C. DALE, Esq., dated Sept. 14, 1822.)

(2.) Mrs. PLYMLEY.—Mr. HOPE writes,—"The *caterpillar* of *podalirius* has just been taken down in Shropshire, *near the spot* where I took the *perfect insect on the wing*—a Mrs. PLYMLEY is feeding it, and if it comes out of the chrysalis I am to have it after it is painted." In a subsequent letter the same gentleman says,—"My *podalirius* history may appear extraordinary, but it is *still true*, and had it not been *Ichneumoned* I should at this moment have *two* specimens of it. The caterpillar is green with orange spots, and *exactly resembles* ROSEL's fig. of it. The lady I allude to (Mrs. PLYMLEY, of Lagnor) has collected *Lepidoptera* forty years, and has *had the caterpillar brought to her more than once*, and the *Papilio* in the year 1807; it feeds on the wild Bullace, *a tree extremely common in the neighbourhood of Netley*" [the locality in which Mr. HOPE's specimen occurred]. (HOPE in letters to J. C. DALE, Esq., date 1824.)

(3.) Rev. Dr. Abbott.—Mr. Haworth observes,—"My friend the Rev. Dr. Abbott, of Bedford, has informed me *that he took* in May last, near Clapham Park Wood, in Bedfordshire, a specimen of *podalirius* in the winged state."—(Haworth, Pref., p. xxvi.)*

Mr. Dale informs me that he now possesses the specimen of *podalirius* referred to, and that it is a "♀ not in very fine order."

(4.) W. H. Rudston Read, Esq., F.L.S., &c.—Mr. Read informs me that *he captured podalirius* "when a boy at Eaton, before I was a collector, and then only preserved it because it was beautiful;" he refrained "from publishing an account of it, being unable to state the date or any particulars of the capture; but nevertheless several years ago mentioned it to Mr. Hope and Mr. Stephens, and had it not been for Mr. Dale or Mr. Curtis, who requested the loan of it, its capture as British would have been unknown except to York collectors."—(Read in letter to P. Rylands.)

With reference to the remarks made by Mr. Neville Wood in the third volume of *The Naturalist* (p. 348) Mr. Read thus writes:—"Had nothing occurred to ruffle my course, you would long e'er this have been apprised that Mr. Wood's statement (viz., that 'Mr. R. had expressed himself not quite certain as to its actually being a *British specimen*') was erroneous. That I might have said 'I did not believe it to be an *indigenous species*,' I do not deny, but how in the world could I have said that, having taken the insect, I did not believe it to be a *British specimen ?*, for being taken in England constitutes that appellation."—(Read in letter to P. Rylands.)

This closes "the case for the defence," which I think is sufficiently strong. It would indeed be difficult to *demonstrate* that *podalirius* is an *indigenous* species; but to how many other species whose right to be considered as British is never disputed, is the same remark applicable! The fact, however, is evident, that in *several instances P. podalirius* has occurred in both the *caterpillar* and *perfect* state in *Great Britain;* and after reading the evidence now brought forward, he who refuses its adoption into the *British Fauna* must be prepared to prove that the Rev. F. W. Hope, F.R.S., W. H. Rudston Read, Esq., F.L.S., the Rev. Dr. Abbott, and Mrs. Plymley (to say nothing of Mr. Dale and the others included under the *first division*) are undeserving of credit, and are wilfully imposing on their fellow *naturalists* to the prejudice of the science they profess to admire.

In conclusion, I would again thank Messrs. J. C. Dale and Rudston Read for their courteous attention.

Bewsey House, Warrington, Nov. 4, 1838.

* Dr. Abbott also at the same time announced the capture of *daplidice* and *lathonia;* Mr. Stephens has confirmed Dr. Abbott's account respecting these species, having since taken them *himself*: he nevertheless still looks with "suspicion" upon Dr. A.'s capture of *podalirius!*

REMARKS ON THE MEETING OF THE BRITISH ASSOCIATION AT NEWCASTLE.

By T. B. Hall.

The readers of *The Naturalist* will, I am sure, join me in "a vote of thanks" to your anonymous correspondent who annually furnishes us with very interesting accounts of such particulars connected with the meetings of the British Association as do not come under the cognizance of the Journals which usually report their proceedings. I can myself bear testimony to the truth of several of the remarks, and only hope that some of the suggestions thrown out in his last paper may ultimately be acted upon. A few observations, either confirmatory or in addition to those contained in the paper before alluded to, will not, perhaps, be considered unworthy of a place in your Journal.

The extravagant price charged for private lodgings and for accommodation at the inns, has already been dwelt upon, but it cannot be too severely censured.—I know one case in which a gentleman, who had previously visited Liverpool, paid £6 for no better apartments than he had in Liverpool, for which he paid £1 a week. The inns charged five shillings a night for beds. How their other charges ranged I cannot say: having friends, and kind ones too, I experienced none of the foregoing inconveniences. These remarks, therefore, may be considered as coming with a bad grace from one who did not suffer by them; but I think they cannot be too much dwelt upon, in order if possible to prevent their recurrence. That any of the members left the town from sheer necessity I am not aware; but I know of many who left on the Saturday, who would otherwise have staid over part of the next week, and leisurely examined the splendid improvements of Grainger, as well as other objects of interest in the town and neighbourhood, which could not be done during the week of the meeting, without neglecting the Sections.

A word or two will not, perhaps, be altogether out of place respecting Grainger's new buildings. For style and correctness of taste they are unequalled in this country; built of solid stone, their durability is insured; and that money is not lavishly expended upon them, I should judge from the reasonableness of the rents, for a good handsome dwelling-house of his building may be had at a less rent than in Liverpool would be paid for one out of which the Winter's blast can with difficulty be kept. Where the funds come from is not a secret to those who supply them; but that he supplies them himself is impossible, for he began without a shilling; that your readers may judge of his operations, he has, I was informed, 1,000 men at work, and to pay these, requires some cash weekly; besides which he has a large establishment of draughtsmen

and clerks. He now proposes to erect courts of law, in the new part of the town, and has reserved a space of ground for that purpose, in an excellent situation; the old courts are in the most inconvenient locality possible. He also intends to build a new Exchange, and will take the old structures into his own hands; at present there are "some vested interests" standing in the way of what would be an immense benefit to the town, but they must give way in time to the public good. He had considerable opposition in doing away the old market, and the new one is now allowed to be the most complete in England; perhaps not the largest, but the merits of a building are not to be tested by size. He builds Methodist chapels, theatres, rooms for exhibitions of paintings, or for any other purpose for which he receives orders. He has already built two fine Corn-exchanges, neither of which will be used by the Corn-merchants, for reasons unknown except to themselves. One of these, denominated the Central Exchange, was appropriated to the Association for its evening meetings; it is a very fine building, with a most splendid roof, the effect of which I cannot describe, but it struck all persons who saw it as magnificent; it is capable of holding an immense number of persons; but as for hearing the speaker, that is altogether out of the question. About one-tenth of the audience, those who are early enough or fortunate enough to get on the front seats, can hear, but those who were within the pillars erected to support the roof, could hear nothing; these pillars, as far as the appearance of the building is concerned, perhaps add to the effect, and were put up by GRAINGER after the building was completed, as he feared the span of the roof was too great. For the purposes of a Corn-market they would have been an additional accommodation, but for music or any public purposes the rooms are of no use. It appears as if all the sound ascended and was lost in the roof. Every meeting held there was to me, and indeed to many others, a mere dumb show. Prof. WHEWELL, who was the most audible and the best speaker there, was only occasionally heard, not sufficiently so even to keep together the "thread of his discourse." The accession of numbers, though it shows the increasing interest taken in the Association, by no means adds to the comfort of the evening meetings; we were much indebted to Mrs. HONEY, who, by her attraction at Mr. GRAINGER's elegant little theatre (the most perfect model of a theatre I was ever in, not even excepting those in London), took away every evening a portion of the superabundant *scientifics*.

The exclusive attention shown to the aristocracy in the British Association cannot be too much deprecated; and if not altered, will one day prove its downfall, as it is not likely that men will give their time and talents in support of a cause unless some acknowledgement is made to them in return. The applause which the Newcastle people lavished on the Duke of NORTHUMBERLAND, and the anxiety they expressed to get only a peep at him or the Duchess, would

make one believe that they had never before enjoyed the extreme felicity of seeing a Duke. No Tory town could possibly have equalled the applause which greeted the Duke, so much so as to interrupt seriously the progress of the evening meetings; and when he condescended to open his mouth the effect was wonderful! As a remarkable fact it may be mentioned, that the Duchess actually walked to church one morning, a distance of about one hundred yards, a piece of condescension which the Newcastle people could not sufficiently appreciate, and which will make a lasting impression upon them.

As regards your correspondent's suggestions respecting the Natural-History Section, they are, I am sorry to say, too true. In the first place, we had the worst accommodation of any Section there—the county courts, where we looked like witnesses in the box, with judge, prisoners, &c. Your correspondent states it to have been better attended than last year. I did not think so; but at any rate all allow it to be miserably attended compared with the other Sections. If Botany were separated from it, I am certain that both it and Zoology would prosper by the division; and it is more than probable that if each department of Zoology had a separate Section, they would all thrive better. Botany is a subject in which many of the fair sex take a most lively interest, and which many have forwarded in an eminent degree. Could not a Griffiths or a Hutchins be found, if there were any Section to which their communications would be acceptable? and though perhaps, according to present notions, the fair sex would not be likely to read them themselves, still they could come from them as "corresponding members." However, as it is, the coupling together of all these departments of Natural History answers miserably; a member might possess a communication on Botany, interesting to botanists only, but it is an infliction on the entomological, conchological, mammalogical, and ornithological portion of the Section, and *vice versâ*, with other separate communications.

One new and very interesting feature of the last meeting was the establishment in Newcastle of an exhibition of models of machinery, specimens of manufactures, &c., in connection, I believe, with the exhibition of paintings and sculpture, which were liberally thrown open to the members. The paintings and sculpture for a commencement were very good, but the exhibition of models, &c., was a sealed book as far as understanding them went, till Friday, when, lo! a descriptive catalogue appears, to be of no use to the members, who now are too busy to see them again. Many of the models of Coal-mines, by Mr. Thomas Sopwith, were very interesting, and the collection was richly indebted to that gentleman for many very ingenious mechanical specimens. The models of the various wooden bridges which are now in progress on the different railway lines in the neighbourhood of Newcastle were very interesting. The Museum is rendered doubly valuable by being connected with the Literary and Philosophical Society,

where there is an excellent library for consultation, with some interesting busts and paintings of natives of Newcastle, who have rendered themselves eminent in science or art, and these will, I think, be found greater than those of many other towns of a similar size in Great Britain. The Museum of the Natural-History Society is, I believe, managed without any paid Curator,* the arrangement of each department being attended to by private gentlemen, well versed in the respective sciences to which they turn their attention; the specimens are, therefore, much better arranged and more correctly named than could possibly be done by any person pretending to a knowledge of every department of Natural History. The conchological department is deeply indebted to Mr. Alder, whose name is known every where as a talented conchologist, and whose private collection is equalled by few. In number of microscopic species even, it would exceed many private collections. The entomological department is indebted, I presume, to Mr. Wailes, whose name is well known; but the Society has much to regret in losing the collection (both of books and plants) of the late Mr. Nathaniel Winch. Owing to some misunderstanding with the Natural-History Society, they have been bequeathed to the Linnæan Society. The specimens would have been valuable to the town as an accompaniment to the localities published in the Society's Transactions at a great expense, and with the then understanding that Mr. Winch's collection should ultimately revert to the Society. I am told that the specimens of native plants were excellent, and will even prove an acquisition to the Linnæan Society, in replacing inferior specimens of British plants. The Transactions of the Natural-History Society are enriched with a valuable paper containing the localities of the land and fresh-water shells, by Mr. Alder, of great use to the resident conchologists; but notwithstanding all the talent that supports these "Transactions," they entail a very heavy expense on the Society, being published in quarto, and many hundred copies remain unsold at the publishers'. Is it not surely better for a Society to publish any paper of general interest in one of our Natural-History periodicals?, where, at a slight expense, they can obtain it themselves, as well as at the same time giving to the public the benefit of it, instead of its remaining enclosed within the ponderous and expensive boards of a quarto publication.

Great credit is due to the local committee at Newcastle, for their general

* The use of Honorary Curators is, I think, clearly shown in your report of the Swansea Literary and Philosophical Society, which represents that Institution in so flourishing a state, and likely to have a handsome building for the purposes of the Society. I think if an Institution is wealthy it is well to have a paid Curator to stuff the birds, animals, &c., but it is, I am convinced, the interest of all Institutions, to put each separate department under the management of Honorary Curators.—[On this subject see the report of the Warrington Natural-History Society, in our present number.—Ed.]

arrangement; they surmounted many obstacles, and were indefatigable in their attention to members, in giving them information, &c. The innkeepers made such exorbitant demands for providing an ordinary for the members (it being indeed hinted to me that it was not in the power of any single one to do it), that the local committee determined to take that part of the business on themselves, and erected an extensive "cookery" at the "Ford." I understand that it was an object of great attraction to the fair sex, many of whom visited it. The soup, as well as some of the other provisions, was cooked in the county of Durham (at Gateshead). The room was very tastefully ornamented, being lined with alternate strips of crimson and white calico; daylight was entirely excluded, but the room was brilliantly illuminated, and round the walls were the names of Newton, Galileo, La Place, Cuvier, &c. &c., in gold letters on a green ground, encircled with branches of Olive, &c. The upper end of the room ended in a sort of semicircle, and there was a raised platform, for the chairman, &c., with a sort of canopy overhead. The whole effect was pleasing in the extreme, and the arrangements were excellent. I cannot say much in praise of the first day's dinner, but I understand the following ones were much better. The Bishop of Durham was in the chair, and I was very much pleased with the lively interest he seemed to take in the proceedings of the Association from first to last; his heart seemed in the cause, and we were considerably indebted to him for his presence while the Duke of Northumberland was detained from our presence by fits of the gout. The Newcastle people provided numerous gaieties for the members. A ball was given on Monday night by the Mayor (T. E. Headlam, M.D.), to which, I believe, all the members were invited at the ordinary without reserve, but I did not attend. A fancy bazaar was held two days during the week, and a flower-show on Thursday. The flowers, I thought, were inferior, but some of the fruit was tolerably fine.

On Saturday a meeting was held in the afternoon for the purpose of getting up a requisition for the formation of a Section for Phrenology in the Association; the meeting was held in the lecture-room of the Literary and Philosophical Society, and was very fully attended; indeed if the room had been twice the size it would have been filled. The meeting was addressed by Mr. H. C. Watson, and other gentlemen favourable to the cause. Mr. Watson's speech gave great satisfaction. What the result of the meeting was, I did not hear, as I was unfortunately obliged to leave before the meeting concluded.

On Monday there was a meeting held of those favourable to the cause of National Education, in the rooms that had been occupied by the Statistical Section. There was also a very interesting botanical excursion on the same day; and as I have seen but a very short account of the plants which were found, you will perhaps find space for a more detailed list of them in your Chapter of Mis-

cellanies. I had also an excursion with a friend to Tynemouth, for the purposes of Conchology, and shall be glad to send you an account of what we discovered.

There was one more object, not mentioned, of course, among the "Lions," but which was well worth seeing; this was a very large nursery-ground at Gateshead, well known over the whole of the North; there was an immense stock of young seedling trees ready for planting. I was told the number of them, but do not remember it. The grounds are not so large now as formerly, owing to the decease of their original proprietor; and being at present under the management of trustees, they were endeavouring to curtail the establishment.

On returning from Port Carlisle on Wednesday afternoon, our steam-boat got aground in the Solway, and we were landed next morning at Annan, where we found we should be obliged to remain till Saturday, and proceed to Liverpool in another steamer. Having thus two days on my hands which I did not wish to spend unprofitably, I paid a visit to Ruthwall Manse, the residence of the Rev. H. Duncan, D.D., author of *Sacred Philosophy of the Seasons*. It is about eight miles from Annan, and though the country immediately round it is flat, still the grounds are very beautiful, and as complete a country residence as can possibly be desired, having every thing complete within itself. The views of the distant Scotch and English hills are extremely beautiful, and the rides in the neighbourhood are delightful. I saw some slabs of Red Sandstone which had been procured from the neighbourhood of Dumfries, containing the marks of Tortoises' feet. These marks, I believe, Dr. Buckland proved to be those of Tortoises' feet, by causing live Tortoises to walk over dough or soft paste, and then the resemblance was traced. Through the kindness of Dr. Duncan, the Liverpool Royal Institution is in possession of a slab containing these impressions, which, with the Storeton slabs, form an interesting collection. There were some highly interesting remains on the Doctor's grounds, which were found in the neighbourhood of his residence, and from the inspection of which I derived much gratification.

Woodside, near Liverpool,
Dec. 10, 1838.

[One of the newspapers, in criticising a late number of *The Naturalist*, observed that "Remarks on the British Association, by a Member," were "sadly out of date." Probably the present paper will be considered still more ill-timed; but we reply that we are desirous of making the defects of the British Association generally known, with a view to the improvement of the Institution.—Ed.]

ON THE NATURAL HISTORY, CLIMATE, AND SCENERY OF THE VICINITY OF ST. PETERSBURGH.

By Charles Drosier.

Before proceeding to the pleasing task I have imposed upon myself, it will be necessary to make a few remarks, by way of introduction, that the reader may form a just estimate of the nature of my undertaking, and be acquainted with the method I intend to pursue in treating my subject. It must not be supposed that I pretend to give a comprehensive and digested account of all the things which it naturally embraces; to do that efficiently, would require a longer residence in the country than fell to my share; a life more exclusively devoted to the investigation of Natural History than mine has been; and, then, the production of a large book; but as I have ever been delighted with the beauties and marvels of "Nature's volume broad displayed," it is possible that I may add a few items to the amount of facts so industriously collected by the many talented perusers of the above-mentioned "broad volume," as Thomson has called it; a volume indeed so broad, that no single person has an opportunity of thoroughly reading it; and even Gulliver's ingenious device, to read the books at Brobdignag in the King's library, if applied here, would prove a signal failure. That such items may become useful, and even important, in advancing the study of Natural History, amongst others, we have the opinion of no less a man than Sir J. E. Smith, so happily quoted in your elegant memoir of Dr. Latham. Emboldened by such authority, I proceed strong in a good cause. My intention is to write a series of papers, if my health and leisure permit, which will strictly be essays, confined to no regular plan, but, as the months will figure consecutively at their head, all that I have considered curious, or worthy of notice, will be detailed in its proper season. To begin, then, with—

January.

Alexandroskey is a village situated on the high Siberian road, bordering the West bank of the Neva, about six miles from St. Petersburgh, between the villages Furfur, Zavoda, and Moursinka; though indeed its appearance would not convey the idea which that appellation brings to the ears of an Englishman, as, in the first place, it forms a continuation of the city, being connected to it by a chain of buildings, which follows the bank of the river, some of which are large and worthy of attention; in the next, it is composed of a motley group of gentlemen's Summer and Winter residences, cottages, shops, and lodging-houses, occupied by those who wish to ruralize, an inn, government offices, churches, &c., but its principal feature is an enormous manufactory belonging to the crown, and

which flanks the river. The Neva is a beautiful river; in the Summer months its current sweeps towards the Gulf at the rate of three miles and a half an hour; it is then thronged with boats, Ladoga barges, tallow barks, floating haystacks, from the interior, and immense timber-rafts; the two latter, especially the last, managed as they generally are, by a dozen or so red and blue garmented Mochicks, as they glide swiftly past, guided with unerring dexterity, are striking and entertaining. At Alexandroskey this river is 350 yards across, and 40 feet in depth in the central part; its banks are mostly green, sloping, and of variable heights, not exceeding thirty yards; but a smooth and narrow strip of Sand, and small pebbles, follows the edge of the water, upon which it is easy and agreeable to walk. The summit of the opposite bank is crowned with a dense thicket, which recedes from the river a few hundred yards, and then blends with a Pine and Birch forest; the breadth of which, at this place, is between four and five miles; a partially open country then commences with a range of respectable hills in the North-East; the wood in an Easterly direction widens as it proceeds, and extends to Lake Ladoga some miles; on the other side of the river, to the South-West of Alexandroskey, lies Czarkacella, contiguous to the Pulkara hills; about eighteen miles distant, and much in the same direction, Pavlovsky; at both these places there are imperial Summer residences; to the North is the city, and to the South-East, five-and-twenty miles, the town of Colpenny. The country included in these limits (as I have observed in a previous paper, on the habits of the Rough-tailed Stickleback) is of a diversified character, composed of wood, swampy pasturage, moss-bog, and primitively-cultivated land; yet the Government in this neighbourhood has in its possession three farms, which were made, I believe, by the direction of the late Dowager Empress, a great patroness and encourager of Agriculture and the arts; they are under the superintendence of Englishmen, and are farmed as well as the country and climate will permit. Having been thus particular at the onset, in giving a description of the place where I resided during my stay in Russia, I shall now proceed to other notices.

Of all months of the year in Russia, January is the most dreary and inhospitable, though to a new comer, if he should be a native of a mild region, it carries a degree of interest, by practically acquainting him with the true nature of intense cold. He may have read and thought of it before, while luxuriating in "the emerald light of leaf-entangled beams," or over a jovial seacoal fire; but of which he could not form a just idea till he had tested it by personal experience. The mean temperature of this month, I should say, averages—18 degrees of Réaumur (the thermometer in general use throughout Russia, one degree of which is equal to 2° 25′ Fahrenheit), but there are days when the mercury indicates—25°, and others when it is not lower than—10°. In 1836 it did not rise higher than—26° for a fortnight, and one morning was as low as—29°; but this

season was said to be severer than any that had intervened since "Swaggering Boney," as the provincial ballad termed him, lost his army in the great Autocrat's dominions. As the effect of low temperature may be either indistinctly remembered, or forgotten by many, I shall not consider it ill-timed to state the results of a few experiments that have been made to ascertain this point:—Boiling water thrown up by an engine, so as to spread at—24° RÉAUMUR, has fallen down in particles of dry ice; at the same temperature Dr. KING found a bottle of common water frozen into a solid piece of ice in an hour and a quarter; and on the morning that I mentioned, when the thermometer stood at—29°, I exposed to the air two Copper vessels of a cylindrical shape, three inches in diameter, and four deep, one filled with cold, the other with boiling water; the first was frozen into solid ice in 15 minutes, the later in 23, and the expansion of congealed water was prettily shown by half an inch of ice, which projected over the rims of the vessels; this expansion under the influence of cold is peculiar, I believe, to but one other body in Nature (cast Iron); it has been attributed to a specific chemical arrangement of their crystals during the cooling process. Captain FRANKLIN, during his first overland American expedition, found the trees as hard as Flint, at about—26°, RÉAUMUR, so that almost every axe he had was broken in attempts to fell them. At—20°, if the hand, while it is moist, be incautiously applied to the metal handle of an outer door, it will adhere; and, if not immediately removed, in all probability would lose a portion of its skin before its liberation could be procured, communicating a sensation so much like that caused by the touch of glowing Iron, that the one might be mistaken for the other. A piece of Iron also, such as the barrel of a gun, brought from the cold into the heated atmosphere of a house, appears to smoke, or give off a vapour; but this is a deception, and proceeds from the rapid condensation of water, held in suspension by the air, upon the metal. I was desirous of experiencing the sensation of cold at—29, RÉAUMUR, without my cloak, and for this purpose left a warm room, and walked out in a simple English dress, about a hundred yards from the house. The air at first affected my lungs, and made me cough (which it will do at—15 or 16 degrees); it next appeared to permeate my clothes, and instantly to act on the surface of my body, like the suffusion of a cold fluid. A small Dog that followed me out, the soles of whose feet, accustomed to a carpet, were thin and nervous, commenced limping to relieve them, till, fairly overcome with pain, he began to sing out lustily; when I took him up in my arms and returned, to restore my stock of animal heat, which had been almost dissipated even in so short a time.

The faces of people engaged abroad in severe weather present a strange appearance, especially those of the bearded peasantry of Russia, from the breath congealing the moment it leaves the mouth, and incrusting the whiskers and hair

of the face with delicate hoar-frost, the sparkling lustre of which is in curious keeping with the natural complexion. When the thermometer stands at—25°, should there happen to be wind, which is not often the case, it is considered unsafe to travel. Even when enveloped in skins, the drivers of sledges have been frequently frozen to death on their seats, and sometimes the travellers themselves. At St. Petersburgh not a Winter passes without some deaths of this kind, but they occur for the most part amongst the Mochicks (peasants), who fall down intoxicated upon the snow, and perish victims to Bacchus. In January, 1836, the driver of a Russian gentleman's carriage, who was waiting for his master at a party, and who forgot to send the vehicle home, which is always done in severe weather, was found dead and stiff on his seat; the thermometer stood at—20° when this occurred. Yet it would appear that in most instances the danger arises from the neglect or carelessness of those exposed to the cold, and that the Russian and English residents make more fuss about it than is really necessary. We know that Capt. Back, during his journey in 1820, to and from Athabasca Lake, to Fort Providence, a distance of 1,104 miles, had no other covering than a blanket and Deer-skin, with the thermometer frequently at—46°, and once—57° Fahrenheit; and what must have rendered him more incapable of bearing cold, was that he sometimes passed two or three days without provisions. It is well known that intense cold produces drowsiness, which is dangerous to indulge in, as it may be considered the precursor of death; yet, strange as it may seem, the Russian women, when their children are fretful, will sometimes expose them to it till this symptom supervenes, when they take them into the house, and the children fall asleep. Perhaps this custom is not more pernicious than that practised by English nurses, of pouring bountiful doses of syrup of Poppies and other "distilments" into their young charges, to obtain the same end.

The atmosphere is usually clear during January, with a mistiness hanging about the horizon; the nights are mostly serenely bright, and the moon seems invested with a splendour which is never witnessed in England. The degree of cold depends upon the quarter which the wind may chance to occupy. Should it be in the North, an almost Arctic climate prevails, and its variation two or three points from that quarter is appreciable in the change that it brings. The West and South-West are the warmest winds that blow, and a steady current of air from those quarters in January, will invariably send the thermometer up to ten and sometimes five degrees Réaumur; and seldom fails to pack the Welkin with snow clouds, which profusely scatter their contents upon the earth. From the North and Easterly quarters snow seldom falls, but sheets of dark grey clouds (called nimbus if I do not err) frequently obscure the sun. The snow does not accumulate much on the surface of the plains; being generally frozen, it flies before the wind, in fine sparkling powder, like the sand on the sea shore, stops

in the beds of rivers, or wherever it meets with an obstacle to its passage; is sifted between the trunks of trees in the forest, and there, collected by the luxuriant underwood, remains and hardens. To walk upon it in this season with common shoes is disagreeable, for a person flounders over his knees at every step he takes, which, in the language of a grave Cambridge professor, "renders itinerating very injucund;" for though it is hard beneath, the superstratum is light and yielding.

The ornithologist near St. Petersburgh finds but scanty materials at this season for the pursuit of his favourite study. Birds, as a nation, are wise creatures, and know the inestimable blessing of a mild climate, as thoroughly as an Englishman knows the comforts of his own fireside; and I think it would not be a difficult thing to prove, from Æsop's and other fables, that they have advanced in the "march of intellect" many ages before the brute creation; we all know how the cock got to windward of the Fox in Dryden's account, and then the trick of the Stork; but be this as it may, very few of the feathered tribe remain to brave a St. Petersburgh Winter, though in the Summer they evince a partiality for the neighbourhood.

Of the resident birds, the first I shall notice is the Hooded Crow (*Corvus cornix*), which continues in tolerable plenty throughout the year, though the majority of birds that are bred at, and resort to this place in the Summer months, congregate about the middle of October in large flocks, and seek a warmer latitude; the others, having their "*res frumentaria*" in the fields cut off by the unrelenting hand of the greybeard Winter, have to depend upon Man for their Winter resources; on this account (and being probably pinched by the weather) they become exceedingly tame, lurk about Pig-holes, and the back-yards of houses, occupying the dirt-heap, in company perhaps with a Magpie and some vagabond Dog; of the latter there are dozens (I may hereafter speak of them), which enjoy a glorious independence, having neither home nor master, and the only drawback to whose happiness is an occasional projectile in the shape of a stick or stone sometimes following close in the wake of their rumps; and a scarcity of the "*res frumentaria.*" So little molestation does this bird meet from Man here, that he seldom troubles himself to fly up when the door of a house within a few yards of him is opened for the egress of an inmate; two or three longside hops, with sometimes a slight expansion of the wings, remove him a few paces, and he begins, with perfect *sang froid*, to whet his beak upon a stone, or any other thing that he likes better; on the high road surrounded by houses, he will allow foot passengers and carriages to pass within five or six yards of him. I have seen a rencontre between this bird and a small Dog, in which the first endeavoured to possess himself of a bone, the latter trying to preserve it with all his energies, till he was compelled to relinquish the spoil to his rather formidable

adversary. In England, when other supplies fail, *Corvus cornix* devours voraciously the bulbs of Swede Turnips, or as I have frequently heard the Norfolk rustics express it, "he joll them out with his bill." The Raven (*C. corax*), I have been assured, is seen here at this period, but I cannot say that my experience has confirmed the fact. The Magpie (*C. pica*) abounds in Summer; a few pairs also remain through the Winter, and become remarkably tame, yet not so audacious as their congener, *cornix*. You do not meet with them in the public road near the towns; and though they will sometimes venture, when the coast is clear, to search for a dainty morsel amongst the exuvia of the kitchen or the fragrant apex of the dirt-heap, they are off under a press of canvass at the first intimation of danger; let them be ever so absorbed in sensualizing over Potatoe pairings, bones, &c. &c., a slight noise will make them suspend the operation, and they directly commence those knowing gestures which recommend them so strongly to the affections of ornithologists. The Jackdaw (*C. monedula*) remains in flocks, sometimes associates with dove-cot Pigeons, and will pick up grains of Corn that have dropped from vehicles on the road; he resorts, however, as well to Pig-sheds and other places where he finds a diet congenial to his palate, but I have not often seen him foraging on dirt-heaps like *pica* and *cornix;* he is very tame nevertheless; and roosts under the roofs of old buildings or churches; the latter do not afford such shelter as ours, which are more decayed (the greater the pity), and less taken care of.

The common Dovecot Pigeon swarms in the city of St. Petersburgh and the country; it is esteemed sacred, and called God's bird by the Russians, from the circumstance of the holy spirit assuming that form when it descended upon our Saviour. To kill and eat it, is considered an act of profanation. It is so tame and incautious in the city, that vehicles have been known to pass over it while engaged in picking up the scattered Corn which falls in abundance from the carts. I have touched the back of one with a walking switch from a Drosky (a peculiar vehicle used in St. Petersburgh), and could have killed it had I been so disposed. This bird is certainly a nuisance in the city; it perches upon the architraves and projections of buildings, marring their beauty, and loads the places where it rests with immense collections of dung, and by its flights overhead it may happen that the symmetry and polish of a pedestrian's exquisite coat, or the bonnet, parasol, or cloak of some fashionable belle, may meet with the same fate that the out-spread banquet of ÆNEAS received from the Harpies on "the shores of the Strophades." The English and Germans eat the Pigeon; and for their tables they are preserved, and sold in the market by the less scrupulous Russians. I had one day an opportunity of observing, myself, how the respect for the Pigeon prevails amongst the lower orders. I shot six, away from the village, at one shot, and brought them home (with the intention of obtaining that master-achievement

of modern cookery—a Pigeon-pie, which I have often thought must be the nearest approach to "ambrosia" we poor sons of Earth have discovered); when I threw them on the table, a Russian servant who was near, after several ejaculations against my impiety and cruelty (for they do not understand the respect with which the English treat their superiors in station), snatched up one of the dead birds, and bursting into tears commenced kissing and fondling it; yet a few days afterwards she plucked them without displaying the least uneasiness, a thing characteristic of the people, who for the most part act from impulse.

The House Sparrow (*Fringilla domestica*) breeds here, and continues the whole year; they go in flocks, mixing with Mountain Sparrows (*F. montana*), which retreat from their wilds when the frost sets in; for the benefit of a better stock of food they resort to barns, and as night approaches they betake themselves to the roofs of cottages, and roost by the warm chimnies. They get through the cold season better than our little birds, which a Russian Winter would utterly exterminate; but they are very thin, and in January, 1836, I found several decidedly frozen, not starved to death. I have observed that the beaks and claws of many individuals of *F. domestica* grow preternaturally long, so that the bird at first sight looks like a distinct species. I have thought this peculiarity may arise from their diet, which is now entirely granivorous, and from the supply of small stones necessary for the process of digestion being cut off in a great measure; but this is merely a theory. The Wood Grous (*Tetrao urogallus*) is seldom found near St. Petersburgh. The Black Grous (*T. tetrix*) and the Ptarmigan (*T. lagopus*) are rare at this season, though the market is abundantly supplied with them from the interior. But as I have finished my sheet of paper, I must defer speaking of animals, &c., till another time.

Boughton, Norfolk,
Nov. 27, 1838.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 194.)

Ballota.—Βαλλωτη. From βαλλω, to reject; on account of its disagreeable smell; or according to Littleton βαλλω, to send forth, and ος ωτος the ear, because it sends forth flowers like ears.

Ballota nigra, Black Horehound, or Henbit.—It is recommended in hysterical

cases. The Swedes reckon it almost an universal remedy in the diseases of their cattle. *Curculio vernale* feeds principally on this plant; though sometimes on *Urtica dioica* or *Lamium album.*

Barbarea.—From St. Barbary, who is said to have found out its virtues.

Barbarea vulgaris, Bitter Winter-cress, or Yellow Rocket.—In Sweden the leaves are used in salads, early in Spring, and late in Autumn; also boiled as Cale. It is sown in gardens as an early Spring salad, and also in England, where it is called French Cress. With double blossoms, it frequently ornaments our gardens. A minute species of *Tipula*, or Gall-gnat, sometimes renders the flowers like a Hop-blossom; but this metamorphosis does not strictly partake of the nature of galls, as it originates not from the egg, but from the larva, which, in the operation of extracting the seed, in some way imparts a morbid action to the juices, causing the flower to expand unnaturally.

Bartsia.—So named by Linnæus in honour of his beloved friend, Dr. John Bartsch, of Königsberg, a most ingenious young man of great promise, devoted to the study of Nature, and who perished untimely whilst pursuing his researches in Surinam, whither he was sent by the illustrious Boerhaave. This event is feelingly lamented by Linnæus in his *Flora Suecica*, p. 211.

Bartsia Alpina, Alpine Bartsia.—The whole plant turns quite black in drying, especially if gathered young; and cannot be seen to advantage except in its native places of growth, where it makes a beautiful appearance. It occupies the loftiest Alps of Switzerland and Savoy.

Bartsia viscosa, Yellow viscid Bartsia.—According to Mr. Hopkirk the flowers have an agreeable, faint, musky smell.

Bellis.—From *bellus*, pretty; also *à bello colore*, from its fair colour.

Bellis perennis, Common Daisy.—No flower has furnished such a theme to poets as this common interesting little plant; yet Sir J. E. Smith observes that it is considered a blemish or intruder in neat Grass-plats.—Miss Kent, in her *Flora Domestica*, observes :—"Who can see or hear the name of the Daisy, the common Field Daisy, without a thousand pleasurable associations! It is connected with the sports of childhood and with the pleasures of youth. We walk abroad to seek it; yet it is the very emblem of home. Turn it all ways, and on every side you will find new beauty. You are attracted by the snowy white leaves contrasted by the golden tuft in the centre, as it rears its head above the green Grass: pluck it and you find it backed by a delicate star of green, and tipped with a blush colour, or a bright crimson.

"The Daisy not only closes its petals at night, but they are also carefully folded over the yellow disk in rainy weather; the power of thus securing the parts of fructification being almost peculiar to plants native of humid and fickle climates."

The use of the petals, which form a ray round these little yellow florets, is to secure them from the effects of inclement weather, until the pollen of the anthers is discharged on the stigmas, so as to prepare seed for future plants; and when this part of the economy of Nature is performed, the ray of the Daisy remains expanded, and does not

"Shut when TITAN goes to bed,"

but continues open until the petals decay.

Transplanting to richer soil, and cultivation (by transforming the yellow florets into petals so as entirely to exclude the disk), produce the double Daisy, varying in colour from white to crimson. Hence also arises the very curious Proliferous, or Hen-and-Chickens Daisy, which exhibits a number of smaller flowers, surrounding, but not completely detached by their own stalks, from the principal centre one. They are sometimes used as an edging to borders, but are subject to partial decay from drought and too much exposure to a hot sun. The English name is a compound of *day's* and *eye*, *Day's-eye*. In Yorkshire it is called Bairnwort, probably from the delight which children take in gathering these flowers. The French call it *Marguerite*, the name of a woman, expressive of beauty, from *margarita*, a pearl.

Berberis.—From *Berberys*, the Arabic name of the fruit.

Berberis vulgaris, Common Barberry or Pipperidge-bush.—In searching for the nectaries at the base of the petals when the flower is fully expanded, if the filaments be ever so slightly touched, the anthers immediately approach the summit and burst with an explosion. When the anthers are thoroughly ripe, if the base of the filaments be irritated with a pin, or a straw, the stamen rises with a sudden spring, and strikes the anther against the summit of the pistil, affording a remarkable instance of one of the means used to perform the important office of impregnation. If it could happen that during the season of bloom the flowers were to remain uninfluenced by adventitious stimulus, the stamens would continue extended at their wonted distance from the pistil, and no fecundation could take place. But let us see the means adopted by Divine Wisdom for insuring the fecundation of this useful vegetable. Each petal has near its base two oblong melliferous glands. Between every two of these glands a stamen is placed, so that whenever an insect attempts to extract the honey exuded by the glands, it must touch, especially the lower and most irritable part of the filament, upon which this organ immediately springs up, and proceeds to cover with its prolific dust the upper part of the pistil.

The astringent principle is so abundant in the bark of this plant, that it is used in Poland to tan leather. The acid present in the Barberry is the oxalic, and it renders the berries so sour that birds will not eat them; but boiled with sugar they form a most agreeable jelly. A very refreshing drink, which is considered

serviceable in fevers, is made by bruising the berries, and steeping them in water. A variety with berries destitute of seed is cultivated in gardens; the berries of this variety are preferable for making jelly. They are frequently preserved for garnishing dishes in Winter. Many agriculturists charge the Barberry-bush with causing the barrenness, blight, or mildew, in Wheat growing in its neighbourhood, but others deny it. For an interesting account of the minute *Fungi* parasitical on this plant, and which are supposed to cause the mildew, &c., in Corn, see BAXTER's *Flowering Plants*, Vol. II.

Beta.—Βητα; so called from the river Bætis, in Spain, where it grows naturally; or, according to BLANCHARD, from the Greek letter β, which it is said to resemble when turgid with seed.

Beta maritima, Sea Beet.—This is a common plant on some of our sea-coasts. The leaves are very good boiled, as are also the roots.

Betonica.—Βετονικη, corrupted from *vetonica;* and so called because the Vetones, a people of Lusitania, first used it; or, perhaps, from *betwn*, Welch. According to HOOKER, from *bentonic*, in Celtic: *ben*, meaning head; and *ton*, good. Its properties are cephalic.

Betonica officinalis, Wood Betony.—This plant was formerly much used in Medicine, and considered an universal remedy, but it is discarded from modern practice; perhaps merely from the disappointment of unreasonable expectation. ANTONIUS MUSA, physician to the Emperor AUGUSTUS, introduced it into such general repute in Italy, that "*Vende la tonica, et compra la Betonica,*" sell your coat and buy Betony, became a prevalent proverb. FERNELIUS and PLINY likewise extol its virtues; and in Spain, of the superlatively excellent it is said, "She has as many virtues as Betony." It is not altogether destitute of virtues, for when fresh it intoxicates, and the dried leaves excite sneezing. It is also smoked as tobacco. The root promotes vomiting, and is violently purgative. It has been suspected that the sternutatory effect is merely mechanical, occasioned by the hairs of the leaves. It enters into the composition of ROWLEY's British herb tobacco and snuff.

Betula.—Corrupted from the Welch *bedwen:* or from *batuo*, to beat, the Roman lictors having their fasces made of the branches; and also in reference to its more vulgar use. HOOKER states its derivation to be from *betu*, the Celtic name for the Birch.

Betula alba, Birch-tree.—The most elegant varieties of this tree may be observed to the utmost advantage in the romantic vale of the Llugwy, near Bettws, North Wales. WILSON well depicts such a spot—

> ——— "On the garden slope
> Of a romantic glade we sat us down,
> Amid the fragrance of the yellow Broom,
> While o'er our heads the weeping Birch-tree streamed
> Its branches, arching like a fountain shower."

The Rev. Hugh Davies describes the largest Birch he has seen as growing on a farm called Llwyn On, in the parish of Llanedwen, Anglesey. Mr. Winch states, that on the margins of the Cumberland and Westmoreland lakes, trees of this kind may be observed equalling in size and beauty those of Norway and Sweden, but are not found on the higher mountains. The beautiful laminæ of the silken bark were used by the ancients as a papyrus for writing tablets, before the invention of paper; and, according to Pliny and Plutarch, the works composed by Numa were discovered in the tomb in a legible state, four hundred years after his interment. If a hole be bored into the tree when the sap rises in the Spring, a sweet liquor distils from it, which, properly fermented, with the addition of sugar, makes a pleasant wine. This process is performed in March, and four or five punctures may be made in a large tree, which has been ascertained to yield nearly its own weight of sap, and that without material injury. When the weather changes from warm to cold, Birch-trees cease to bleed, and on returning warmth begin again. In Northumberland, fishermen put the bituminous bark into a cleft stick, and lighting it, use it for fishing in the night, and spear the fish attracted by the light. The portable canoes of the North-American Indians are commonly constructed with this material, and on the banks of the lakes of the North of Europe are produced those enormous Birch trees, the bark of a single one of which is sufficient to form a large canoe. Throughout Europe the same name, with little variation, is bestowed on this tree; and that derived from *Birka* or *Birke,* in reference to the pre-eminent beauty and utility of its bark. The economical uses of the different parts of this tree are almost endless, and to the inhabitants of the Northern climes it is invaluable.

Betula nana, Dwarf Birch.—Linnæus observes that those plants which chiefly grow upon mountains, are rarely found anywhere else but in marshes: probably because the clouds resting upon the tops of the mountains keep the air in a moist state, as do fogs, the clouds of the lower atmosphere, in meadows and marshes. The leaves dye a finer yellow than that yielded by *B. alba.* It affords the humble Laplander in the Summer, when he lives on the mountains, fuel for the fires which he is obliged constantly to keep in his hut to defend him from the Gnats; and, covered with the skin of the Rein-deer, it forms his bed. The harness for Horses in some parts of the Highlands of Scotland is made of the twisted twigs of Birch.

ABSTRACT OF DR. ROBERT H. SCHOMBURGK'S REPORT OF AN EXPEDITION INTO THE INTERIOR OF BRITISH GUIANA.

By Henry Buist.

In the latter part of the year 1834, an expedition to explore the interior of British Guiana was decided upon by the Council of the Royal Geographical Society of London, which, upon being communicated to the Government, met with the fullest sanction and patronage of his late Majesty's Ministers, and Dr. Schomburgk was selected to conduct the exploring party.

The objects of the expedition were thoroughly to investigate the physical and astronomical Geography of the interior of British Guiana. All geographical information obtained during the expedition to be considered the property of the Society, and at its disposal, to be published in any way it may think fit; but collections of Natural History to be the property of Dr. Schomburgk, with the exception of one set of any collection of dried plants, birds, fishes, or insects, which shall be presented to the British Museum in his name, and one set of any geological specimens, to be presented to the Geological Society of London. Dr. Schomburgk has now for some time been engaged in exploring British Guiana, and has already sent several reports of his proceedings to the Royal Geographical Society, many of which are published in the Journal of that Society, and which are of great interest, particularly to the naturalist, as they not only give a lively picture of the richness and exuberance of the vegetation of the country through which he has passed, but also contain many interesting observations on the habits of the animals met with. Of these reports, therefore, I propose in the following pages to present to the readers of *The Naturalist* such an abstract as I hope may be of interest not only to the naturalist, but also to the general reader.

In pursuance of his instructions Dr. Schomburgk left George Town, Demarara, Sept. 21, 1835, and, coasting around the peninsula of low alluvial land of about twenty miles in breadth, lying between the two rivers (Demarara and Essequibo), reached the entrance of the Essequibo, which discharges itself into the Atlantic Ocean by an outlet fourteen miles wide from shore to shore, but separated into four channels by three low islands, the chief of which is seven miles in length. He ascended the river as far as the post at the confluence of the Cayuny with the Essequibo, where he remained for several days, engaging Indian rowers and other attendants to accompany him.

On the 1st of October, all preparations being completed, he and his party (consisting of three Europeans, a military officer, a resident of Demarara, four negro attendants, and the crews of the three corials, viz., five negroes, five Caribbees,

three Macoosie and two Accaway Indians, in all twenty-two persons) began the ascent of the river Essequibo. At Aritaka, in latitude 6° 11′ North, they reached the first rapids. South of these rapids the river assumed a new aspect, displaying numerous Sand-banks rising above the surface, which obliged them to cross and recross constantly to avoid running aground. The Iguana (*Lacerta iguana*) has selected these as a deposit for its eggs, which when fresh are a great delicacy, as are also the animals themselves. The Indians shewed dexterity in securing them, and in a short time took some hundred eggs, and captured several Iguanas. Their course next lay along the narrow island of Gluck, called Aramisary Yrupacoo by the Caribbees, from a small species of Tiger which was formerly very abundant there. At the Southern end of the island the river Tipoorie falls into the river from the South-West. The banks of the Essequibo are here from ten to twelve feet high, of Clay and Sand, slightly covered with mould and luxuriant vegetation; behind them generally extends a natural ditch, formed by the receding waters after annual inundation. It was still partly filled with water, and contained many fish, with their natural enemy, the Heron, stalking about.

On the 7th of October they reached the island of Hoobucuroo, where the breadth of the river is 1,520 yards. The forest here reigns triumphant, all traces of civilization are left far behind; above, around, one dense mass of foliage. Pre-eminently above all towers the majestic Mora, with its dark-leaved branches—the gigantic *Mimosa* of the Western hemisphere, equal if not superior to British Oak for ship-building; the scarcely less stately and equally useful Saouari (*Pekea tuberculosa* of Aublet), which bears a rich and nutritious nut; the Sirwabally,* excellent for planking vessels, and resisting the attacks of Worms; some species of Wallaba† (*Dimorpha falcata*); the Trumpet-tree or Cecropia; the Water Guava (*Psidium aromaticum*), which replaces the Mangrove of the sea-shore, and yields an aromatic leaf, useful in dysentery; and many others yet unknown or undescribed.‡ Still, though unable to assign each its separate species, the observing naturalist cannot fail to notice that these trees bear blossoms, leaves and fruit not their own. The Wild Vine or Bush-rope of the Colonists is seen, at times, twisted like a cork-screw round the loftiest trees; at other times intertwined like the strands of a cable; then drooping to the ground, and again taking root, and thus as it were securely anchoring the tree against the fury of the sweeping blast; the wild Fig-tree, an unusual parasite, occasionally taking root on the topmost branches of the Mora, deriving nourishment from its sap—and this again overrun by varieties of the climbing Vine: the whole rendered bright and gay by the brilliant blossoms of the Hoyowa or Incense-tree (*Amyris ambrosiaca* of Willdenow), which perfumes the forest with its sweet-smelling rosin—both its

* Fam. *Saurureæ*. † *Eperna* of Aublet; *Panzeria* of Willdenow.

‡ Dr. Hancock gives the Indian names of fifty of these trees.

gum and its bark possessing valuable medicinal qualities. Scarlet Passion-flowers, others white as snow; *Combretum racemosum*, with several species of *Bignonia*, the most beautiful climbers of our European conservatories, hanging in natural festoons; the crimson flowers of *Bignonia cherère* of Aublet, conspicuous even here, where all is bright and beautiful.

On the 15th of October the party passed the Twasinkie Mountains, rising 1,100 feet above the river, the range extending away to the Westward. The Saquiarie offset of the Twasinkie Mountains derives its Caribee name from a remarkable pile of large Granite boulders so placed as to resemble a water-jar. The boulders are about 150 feet below the highest peak of the hills, which are about 800 feet; they rise perpendicularly to the height of 100 feet; forming a very remarkable feature. The coloured people who accompanied me, and had formerly ascended these hills, described those stones as enclosing a large cavity partly covered by a square mass of Granite. We here found a beautiful Orchideous plant new to me. Its flower was an inch in diameter; the petals of a rich purple, and a velvet-like appearance; the helmet of the same colour; and the labellum striated with yellow.

Oct. 16.—Halted on the Eastern side of a large island. The first plant I saw on landing was a *Mikania* (*angulata*), and in its vicinity grew likewise the far-famed *Mikania guaco*. The bitter extract so peculiar to the tribe of *Eupatorineæ* prevailed in a striking manner in the Guaco. I had an opportunity of comparing the two species of *Mikania*,* both of which are medicinal; the young leaves possess the bitter much more than the old ones. The natives call it "*erra-warrant*," and use a decoction of it in syphilis; but its property as an antidote to the bite of poisonous Snakes is not known here. Our resting-place was selected in the vicinity of thousands of Palm-trees; but, inviting as it was at a distance, we found it by no means comfortable, the ground being over-grown by

* In the first part of a paper ("An Enumeration of the Plants collected by Dr. Schomburgk in British Guiana," by George Bentham, Esq., F.L.S.) published in the October Number of the *Annals of Natural History*, a new species of *Mikania* is described with the following characters:—*Mikania racemulosa, sp. n., fruticosa, scandens, ramis teretibus petiolesque pube fusca scabridis foliis petiolatis late ovatis acuminatis integerrimis, basi obtusis, supra scabris, subtus subvelutino-pubescentibus irregulariter penninervus, ramorum floralium parvis triplinerviis, panicula composita, racemis oppositis elongatis terminali longiore, pedicellis bracteola duplo longioribus capitulo subæquilongis, involucri squamis oblongo-linearibus apice fimbriatis, achœnio glanduloso.* Brit. Guiana.—Leaves four to five inches long, about three broad. Pedicels numerous, divaricate, about two lines long. Flowers whole. This species, very well marked by the flower-heads being all pedicellate along the axis, is probably allied in this respect to *M. Houstonii*, which however is described as entirely glabrous.

In the same paper the following other species are mentioned as being discovered by Dr. Schomburgk in British Guiana, viz., *M. Hookeriana*, *M. denticulata*, *M. convolvulacea*, and *M. Parkeriana*.—H. B.

brush-wood, and covered with sharp prickles, which had dropped from the Palms. Wherever the Sawary, a species of Palm, is growing, it is indicative of barren Sandy soil. The chattering of the numerous Monkies resounded incessantly from the interior of the wood.

Oct. 19.—In the morning saw the Maccaray Mountains in the South-East; they looked abrupt and picturesque. The river was now free of islands, about 1,400 yards wide, and slightly meandering. I saw a number of graceful little Palms (perhaps a *Bactris*), and was surprised to hear that the Macoosie Indians made their celebrated blow-pipes out of a similar species. I cut several of them, and certainly the pith inside is so soft that it can be removed with the greatest ease. A species at the Rupurwony is said to be still better adapted for the purpose. In its vicinity grew another Palm, called by the natives the Kirahagh Palm. They use it for fencing in the mouths of inlets (*kirahagh*), to prevent the escape of fish when the water has been poisoned. It is knotted, and the internodes are one and a half or two inches long; it is more elongated than the Rattan-Cane. Four miles South of the mountains the rapids again commence, and continue for eight miles a very labyrinth of islands. The Pacou* abounds here. At our various halts we caught 110 Pacous, at an average of twelve pounds each, making thirteen hundred weight, exclusive of other fish. Enormous blocks of Granite, or rather of Gneiss, many of them black and glossy, from thirty to forty feet high, and from ten to fifteen feet in diameter, occasionally rent asunder, obstruct the river's course for several miles. They are often piled together, and covered with numerous Orchideous plants, Pine-apples, small shrubs, and a few stunted trees; one beautiful Orchideous plant, resembling a young Sugar-cane, and covered with bright yellow flowers, particularly attracted me.

Oct. 23.—In the morning saw the mouth of the river Rupunoony (at which we arrived during the day), one of the chief tributaries of the Essequibo from the South-West. We halted for the night on the Western side of the river, by the side of a small kirahagh or creek, where we noticed a species of Haiari;† the

* The Pacou is from 16 to 24 inches in length, suboval in shape, with very small scales, of a silver-grey ground-colour, beautifully spotted with bright scarlet. It chiefly feeds upon aquatic plants and seeds, and is when well prepared quite a delicacy. The Weyra, an aromatic vegetable eaten by the Pacous, is employed by the natives for the purpose of catching the fish.—H. B.

† The Haiari is a plant of the order *Papilionacea*, bearing a small quantity of bluish blossoms, which produce pods about two inches long; leaf nine inches long, central stem with four spear-pointed leaflets on each side, two inches long, and one at the apex: root, when full grown, three inches in diameter, containing a gummy milky juice, which is a powerful narcotic, and prepared for fishing by the Indians by beating with sticks, until reduced to a mass like coarse hemp; the root is then employed to saturate Corial full of water until it is of a milky whiteness. It is then conveyed to the fishing spot, and the water sprinkled with the infusion (a solid cubic foot of the root will poison an acre of water surface); in about twenty minutes every fish within its influence rises to the surface, and is then easily captured.—H. B.

wood is used by the Indians for poisoning the waters to catch fish. It is a ligneous climber, or Bush-rope as it is called here, with pinnated leaves and papilionaceous flowers, which, if examined carefully, will be found to be *Robinia scandens* of Willdenow (*Lonchocarpus nicou* of De Candolle), or a variety of it which Dr. Hancock states his having used at the fall below.

Oct. 24.—Commenced the ascent of the Rupunoony, the vegetation of which river is far less luxuriant than that of the Essequibo: the banks are lined with the Water Guava, conspicuous by its light green leaves and snow white blossoms; and clusters of the Sawary Palm, a sure sign of poverty of soil. For several days past the Caymans had shown themselves very frequently. To-night one full sixteen feet came along, close to the bank, to reconnoitre us. We saluted him with balls, which we saw strike, but took no effect. He only plunged and re-appeared to watch our movements. On the 25th we reached the Rivulet Annay, which falls into the Rupunoony on its right bank, about twenty miles from its confluence with the Essequibo, and here, at what is usually considered the South-West extremity of the British colony, we formed a temporary habitation, where the whole of the month of November was passed, recruiting the health of the party, in obtaining information from the natives, collecting and preserving specimens in Natural History, &c.; and on the 1st of December with three corials proceeded in the ascent of the Rupunoony.

The river meanders along a South-Eastern offset of the Parime Mountains. Its banks are of light yellowish Clay, mixed with Sand; trees of moderate size skirt the banks, and immediately behind them extend the savannahs to the foot of the mountains. Sand-banks were frequent. We observed black porous rocks lying on the banks or embedded in the Clay. Banks of Gravel occur, consisting chiefly of small irregular fragments of Quartz and Granite. The King-fisher (*Alcedo*), called by the Caribs "*Sacka-sacka*," is the most common bird in these regions. We noticed four species, one of the size of a Sparrow, with a fine orange breast (in Caribee "*Sarrie curou*"). Divers ("*Carara*" of the Caribs) are likewise numerous. Next morning we continued the ascent of the Rupunoony: the banks were wooded occasionally. Savannahs approached the river on the Eastern side. We ascended one of the banks to take a look at the savannahs. The Grass was six feet in height. The savannahs seemed to extend from four to five miles, to the Eastward, and were bounded by gently-undulating, well-wooded ground. The mountain-chain Conucon bore nearly South. The nearer we approached the mountains the more turnings made the river, and the shallower it became. Its banks have, however, a more lively appearance, and we singled out some noble trees; even some Silk Cotton-trees* (*Bombax globosum*) would have

* The Silk Cotton-tree grows to the height of 100 feet, and 12 or 14 in diameter, and is in great

done honour to the banks of the Essequibo. The Heliconia* (*Bihai*), with its large green leaves, and the leafless Jacaranda,† covered with numerous blossoms of the finest blue, relieved in a great measure the former monotony of the vegetation. We now approached the mountain range of Sierra Conocon, through which the river Rupunoony has forced itself a passage. They are all Granite, well covered with wood, and inhabited by a numerous tribe of Indians called Warpeshanas or Mapeshanas. We observed on the banks of the river two species of Palms we had not before seen; the one, small and graceful, grows in groups, and is called "*Maraniara*;" the other, slender, often fifty feet high, and has only a few leaves of a light blue colour. They had neither flowers nor fruit.

The river had become so very shallow that the party was obliged to leave the large corials and set out with only one small one and four Indians, together with the most indispensable articles, leaving the others at an encampment which they made at the mouth of a small streamlet called Arripai. They accordingly started on the 15th of December, but in a short time were obliged to discontinue their progress by water. They therefore landed, and had the corial drawn up, and unloaded. Since leaving Annay they had had no reason to complain of the Mosquitoes, there being few or none at their night quarters; but in lieu of them they had from sun-rise to sun-set to endure the painful bites of a small Fly which were in thousands on the river. Wherever they alighted, either on the face or hands, they drew blood, and a spot remained for weeks. The poor Indians, uncovered as they were, presented a pitiful appearance in consequence of the stings and swellings which followed them. The Caribees call the insect "*Mapiré*." Next morning we wandered over the savannahs (which as we left the mountains approached the Eastern bank of the river), and went to a small settlement of

request among the Indians, for making their largest canoes. Its roots spread along on the surface of the ground from 10 to 15 feet; the trunk is covered with a thick Ash-coloured bark, set with short sharp prickles. The blossom, which appears only once in three years, and consists of a green calyx with five white folliculi, and the petals, with five stamina, is succeeded by a bud containing a fine silky cotton, of a light grey colour.—Mart. *Brit. Colonies*, Vol. II.—H. B.

* The Heliconia of Linnæus is a genus of large-leaved herbs which are natives of South America, belonging to the class and order *Pentandria Monogynia*, and natural order *Musaceæ*. Generic characters:—flowers included in coloured spathas; partial flowers in bundles; corolla six cleft; the exterior clefts two-lipped and revolute; the inner convolute; stamens inserted into the base of the corolla; ordinary number six, but parts of them often abortive; filaments oval-shaped, and erect; anthers linear; style three-sided; stigma obtuse; capsule oblong, three-sided, three-celled, and full of seeds.—H. B.

† The Jacaranda of Jussieu is a genus of tropical plants belonging to the natural order *Bignoniaceæ*. Generic characters:—Calyx] bell-shaped, five-toothed; corolla funnel-shaped, limb five-cleft, spreading; stamens, anthers two-celled; rudiments of five filaments; style with a two parted stigma; capsule roundish, compressed, woody, and two celled; seeds in a double series, with membranous wings. The full-sized tree forms a beautiful kind of rose-wood.—H. B.

Warpeshanas. Here every thing that could be spared was left behind, and on the 19th of December, with provisions calculated for ten days, Dr. Schomburgk proceeded on his journey to the Southward, across the savannahs. One of the Indian boys brought a beautiful piece of crystallised Quartz with laminæ of Mica. On returning from Corona I examined the mountains, and found the crystals were partly embedded in Gypsum. Direction of strata North-West, and the place surrounded with numerous boulders of Granite.

Dec. 20.—Continued our journey, accompanied by many Warpeshanas, who intended to make a trip of pleasure. Crossed the Rivulet Akalaurie, flowing from the East. *Malpighia verbascifolia* was here only in flower, while at our leaving Annay a flower of that plant was scarcely to be discovered. It spread over the whole savannah, and its bright yellow flowers and light green leaves, silvery below, were very pleasing. We shortly after came to a tree loaded with fruit of the size and appearance of a black cherry, and of delicious taste, resembling custard; it is milky, and contains one or two flat seeds; the leaves are bright green, and lanceolate. The Caribees called the fruit "*parata*," the Warpeshanas "*witchaway*." We passed several large beds of Quartz which crossed the savannahs in North-East and South-West directions. From what I could see, they consisted of loose fragments, being raised sometimes only one or two feet above the savannah. The Quartz itself is milk-white, passing into rose-colour. Quartz is here one of the most prevailing rocks.

Dec. 22.—Reached the Cartatan or Corona of the Portuguese, the largest fall of the Rupunoony. It is formed by a Granitic dyke, which crosses the river in an East-North-East direction. At several places while crossing the savannah we had observed isolated blocks of the same composition, which is remarkable for numerous holes, as if artificially formed. Gladly would I have explored the river to its sources, but the want of water for even our light canoes, a severe intermittent fever, and the approaching rainy season, would not allow it. We were therefore obliged to bend our steps Northward, and on the following day reached our encampment at Aripay. When I planned the ascent of the Rupunoony River it was one of my chief intentions to see the plant from which the Indians prepare the celebrated Ouralie or Wourali poison. While at the lower Rupunoony I had always been told that it grew on the Conocon Mountains, and I soon found that a day and a half journey would bring us there. After our return guides were therefore engaged, and we started on the morning of the 25th of December. At five miles the ascent commenced, and by no means an easy one; after a march of eight hours and a half we reached a settlement of Warpeshanas, where we intended to rest for the night. On our arrival the chief dispatched some person to his field; he soon returned with a load of the finest Sugar-cane I ever

saw; indeed the fertility of the soil was astonishing, although the height was between 2,300 and 2,500 feet above the plain. The darker coloured Banana, so much esteemed at the colony for culinary purposes, grew to perfection. On the next morning we again pursued our journey over hill and dale. We passed a Maran-tree (*Copaifera officinalis.*) It is a lofty tree with light-grey bark, a fine branching head, and pinnated leaves. The Indians cut a semi-circular hole towards the bottom of the trunk to the very heart of the tree. At certain seasons of the year, chiefly February and March, the balsam flows abundantly, and fills the hole in the course of the day; next morning it is put into calabashes, and forms an article of barter. We found a large quantity in the hole; it was of a yellowish colour, and quite clear. The Indians eagerly anointed their bodies and hair with it.

Our guides stopped at a glen near a spring, and going to one of the ligneous twiners which wound themselves like Snakes from tree to tree, they called out "*Ourari,*" the name of the plant in Warpeshana. The Ourari (*Strychnos loxifera*, H. B.) is a ligneous twiner; its stems often more than three inches thick, and very crooked; its bark rough, and of a dark greyish colour; the branches thin and inclined to climbing; the leaves dark green and opposite, oval, acute, five-nerved, and veined; young branches and leaves hirsute; hair brown, cirrhiferous, but not peculiar to every branch; fruit of the size of a large apple, round, smooth, bluish-green; seeds imbedded in a pulp, and consist chiefly of a gummy matter which is intensely bitter.* We observed many heaps of the cut wood covered with Palm-trees, which, as the Indians told us, had been left by the Macoosies. The plant grows only in two or three places, which are resorted to by the Indians from all directions, and often from a great distance.

We descended next morning to the savannahs, where preparations were made to leave the following day for the encampment. Several groups of trees which during the dry season rise like oases out of the savannah, form during the inundation small islands. The groups or inlets consist of accumulated Sand mixed with vegetable earth; the drift matter of the currents during the inundation. The soil being richer than the adjoining arid savannahs, some seeds may have sprung up; they survived the first overflowings, became able to withstand the force of the currents, and assisted to form a larger accumulation of detritus and seeds. These hillocks, scarcely raised more than ten or twelve feet above the savannahs, have their peculiar Flora: The *Inga unguis Cacti*, several *Cassiæ*, large *Cacti*, which raise their limbs like gigantic candelabras, and a species of night-blooming *Cereus*

* A much fuller description of this plant, with drawings, &c., and the mode of preparing the poison (for the first time sent to this country) has been transmitted by Dr. Schomburgk to the Linnæan Society.—H. B.

interlacing the trees, formed the chief features. At one of these oases we found several Cashew-trees* (*Anacardium Occidentale*) in full bearing, a most welcome discovery where water is scarce.

Law Park, near St. Andrews,
Dec. 12, 1838.

(To be continued.) 457

SKETCHES OF EUROPEAN ORNITHOLOGY.†

Gould's "Birds of Europe," Part XX.

By Neville Wood, Esq.

(Continued from p. 191.)

Red-collared Nightjar, *Vociferator ruficollis*, N. Wood,—Engoulevent à-collier-roux, *Fr.*—A male is figured, natural dimensions; the plumage is executed with great delicacy. Inhabits the North of Africa, very rarely visiting Europe. The female nearly resembles the male, but has less white on the throat. Habits unknown.

Blackwinged Elanus, *Elanus melanopterus*,—Elanion blanc, *Fr.*—An adult and a young bird are given, of the natural size. In attitude the upper figure reminds us of the performances of our worthy countryman W. Lewin. It is dispersed over all the temperate portions of the whole world, but is no where a permanent resident in Europe. Subsists on insects, and occasionally eats reptiles

* The Cashew-tree belongs to the natural order *Terebinthaceæ*. It is an elegant tree, bearing handsome corymbs of sweet-scented flowers, succeeded by an edible fruit of the apple kind, of a yellow or red colour. The fruit has an agreeable subacid flavour, and some degree of astringency. The Cashew-nut protrudes from one end of the apple. It is of the size and shape of a Hare's kidney, but is much larger at the end next the fruit than the other. The outer shell is of an Ash-colour, and very smooth; under this there is another which covers the kernel; between these there is a thick inflammable oil, which is very caustic; this will raise blisters on the skin, and has often been very troublesome to those who have incautiously put the nut into their mouths to break the shell. The kernel when fresh has a most delicate taste, and abounds with a sweet milky juice. This tree also annually transudes from five to twelve pounds weight of a semi-transparent gum, similar to gum-arabic, and not inferior to it in virtue or quality, except that it has a slight astringency, which perhaps in some measure renders it more valuable.—H. B.

† We have received the January number of *The Analyst*, containing a continuation of the critical notices of Mr. Gould's work; and we feel called upon to express our thanks to the writer (Dr. Shirley Palmer, of Birmingham) for correcting an unaccountable misstatement of ours in a recent No. of *The Naturalist*. The articles in question were commenced by Dr. P., and not by ourselves, which we are fully as desirous to make known as the Doctor himself can be.

and birds. From its short feathered tarsi, and long wings, it is doubtless as expert in the air as the Common Kite and White-headed Elanus, but many important points of difference lead us to the conclusion that its proper station is not in *Elanus*.

Bonelli's Eagle, *Aquila Bonelli*,—Aigle Bonelli, *Fr.*—An adult male occupies the plate, two-thirds of the living size. As far as shape and plumage are concerned, we have no complaint to make against it, but we desiderate in its general aspect the character and boldness which belong more or less to the genus. Inhabits Africa, and is not uncommon in Europe. Mr. Gould's figure was copied from a live specimen kept two or three years in the Zoological Gardens. We would rather it had been taken from a dead bird shot in its native haunts. No account of its habits is supplied. Our author extracts his description of its plumage from Temminck.

Siberian Thrush, *Turdus Sibericus*,—Merle à-sourcils-blancs, *Fr.*—A male and female are figured very beautifully, though the discriminating ornithologist will not fail to discover one or two slight defects. Inhabits the wooded mountains of Siberia, whence it occasionally strays into Russia and Crimea. Common in Japan, as Mr. Gould assures us. Habits unknown. We believe this bird to be a true *Turdus*, with due deference to our author's opinion to the contrary. By those who characterize *Turdus* and *Merula* separately, it would probably range on the confines of the former genus, where it "inosculates" with the latter.

Olive Reedling, *Salicaria olivetorum*, Strickland.—The figure, natural size, is pretty, but as we know nothing of the species, we cannot pronounce as to its accuracy. It was discovered in one of the Ionian Islands in 1836, by Hugh E. Strickland, Esq., of Cracombe House, who observes that it is by no means rare in Zante, but that from its shy and restless habits he could only procure two specimens. "Frequents Olive-groves, and is less aquatic in its habits than some of its congeners. Its note is a rambling warble, closely resembling that of *S. arundinacea*." We have no doubt but this species will ere long be removed from *Salicaria*.

Iceland Gull, *Larus Islandicus*,—Mouette d'Icelande, *Fr.*—An adult male is very fairly figured, rather under the natural size. Not uncommon on our shores, but is more abundant in the Northern regions, being driven Southward by the severity of the weather, and the young birds, as usual, being most prone to wander. In winter the head and neck are streaked with grey, and the plumage of young birds is barred and mottled. For an accurate description of this species see Selby's work on British birds.

White-winged Wagtail, *Motacilla lugubris*,—Bergeronnette lugubre, *Fr.*—The figures, representing one bird in Summer, the other in Winter plumage, are wanting in grace and freedom. Inhabits the East of Europe, and is easily

distinguished from its European congeners by its superior size. In habits and changes of plumage it resembles other Wagtails.

Purple Heron, *Ardea purpurea*,—Heron pourpré, *Fr.*—Purper Reiher, *G.*—An adult male, two-thirds of the natural size, by Lear. This bird seems to form a link between the more typical Herons and the Bitterns. Frequents Reedy marshes, hiding itself in dense herbage. Incubates on the ground, laying three pale bluish-green eggs. Subsists on Frogs, Mice, fish, insects, and the like. The sexes are similar, but young birds want the pendent crest of adults. Inhabits the whole of Europe, Asia, and Africa.

Pallas's Dipper, *Cinclus Pallasii*,—Cincle de-Pallas, *Fr.*—This bird has only recently been met with in Europe, a few specimens having occurred on the Eastern confines. An adult and a young bird are figured, with great truth and beauty. Habits not ascertained. The adult is of a uniform chocolate colour, but the immature birds are grey with crescent-shaped markings. Mr. Gould believes the Japan Dipper to be identical with this species, which, however, yet remains to be determined.

Fen Reedling,* *Salicaria palustris*,—Becfin verderolle, *Fr.*—Sumpf Sanger, *G.*—The plate represents an adult. Common in central Europe, and on the banks of the Po and Danube, &c. Mr. Gould observes that it so closely assimilates to *S. arundinacea* (or *hirundinacea*, as, by an unaccountable oversight, it stands in our author's letter-press) as to render it impossible to distinguish the two as species from an inspection of preserved specimens. We, however, believe that the superior size of the bill in the present species is an amply sufficient distinctive character. "Its song," says Temminck, "is singularly varied." Builds on the ground, in marshy places, among the roots of Willows, &c., the nest being spherical, and constructed with considerable art. Lays four or five Ash-coloured eggs, spotted with light blue. Feeds on insects and berries.

Lead-coloured Falcon, *Falco concolor*,—Faucon concolore, *Fr.*—One figure, natural size. The head, in a difficult position, we were almost going to say, *better than Nature*. It certainly is *true to Nature*. Inhabits the North of Africa, and occurs in the Western portions of Abyssinia. Mr. Gould believes his figure represents an adult male. This bird is distinguished from the Hobby and other Falcons by its uniform Lead-colour. It is supposed to feed on birds and insects, and to resemble the Hobby Falcon in habits. This, however, is derived not from facts but from *à priori* reasoning.

American Bittern, *Botaurus lentiginosus*,—Butor de-l'Amerique, *Fr.*—An adult is beautifully represented, two-thirds of the natural dimensions. This very

* Termed by some authors the Marsh Warbler. It would, therefore, be our Marsh Reedling, were that name not already applied to *S. arundinacea* of Britain.

rare European species—a specimen of which, forwarded by a correspondent, now lies beside us—was first shot in Britain in 1804, and described by MONTAGU as the Freckled Heron (*Ardea lentiginosa*). A second specimen occurred near Plymouth in 1829 (See *M. N. H.*, for June 1837). Inhabits America, where it is sparingly diffused over the marshy and well-watered parts of the country, and being nocturnal in habits, resting in the day among the long herbage. Its sight is, of course, acute during twilight, and its hearing, says WILSON, is at all times excellent. Breeds in swamps, laying four greyish-green eggs among the long Grass. The food appears to consist of fish, Frogs, &c. According to Dr. RICHARDSON it is "common in the marshes and Willow-thickets of the interior of the fur countries up to the fifty-eighth parallel. Its loud booming, exactly resembling that of the Common Bittern of Europe, may be heard every Summer evening, and also frequently in the day."

TOUPET TIT, *Parus bicolor*,—Mésange bicolore, *Fr.*—An adult figures in the plate. Inhabits America, but as Mr. GOULD has received a few specimens "undoubtedly killed in Russia," he has no hesitation in placing it in the European Fauna. Its habits and food, as detailed by AUDUBON, appear closely to resemble those of our Garden Tit, *Parus hortensis* (or *major*). Its notes are "loud and mellow." Like the Garden Tit, it is of a fierce and destructive nature, sometimes killing small birds, by repeated blows on the skull. Builds a warm nest in the hole of a tree, laying six or eight pure white eggs, spotted with red at the large end. The sexes are nearly similar.

RUFOUS-BACKED HERON, *Ardea russata*,—Héron roussâtre, *Fr.*—The figure, natural size, represents an adult, but we know too little of this rare species to venture an opinion respecting the ornithological execution of the plate. The first specimen killed in England was in 1805, and is now in the British Museum. Extremely rare in Europe, but occurs mostly in the Southern and Eastern portions. Dispersed over nearly the whole of Asia and Africa, in some parts of which it abounds. Feeds on fish, Frogs, insects, &c. Habits unknown. The beautiful contrast of the white and rich orange colour gives the adult of this bird a strikingly handsome appearance.

RED-CHESTED PLOVER, *Charadrius pyrrhothorax*, TEMM.—"Faithful representations" of an adult and a young bird, living size, appear on the plate. All Mr. GOULD appears to know of this species is that he has received a specimen from TEMMINCK as a European bird, and that, having seen it in many collections from India, he believes it to be only an occasional visitant to the East of Europe.

SLENDER-BILLED CURLEW, *Numenius tenuirostris*, SAVI.—The plate represents an adult of the natural size. The size of the bill, and the singularly-contrasted markings of the under parts, at once distinguish this bird from our British Curlews. Inhabits the South of Europe, and was discovered by Dr. SAVI. Of

its habits nothing has been ascertained; and indeed the species appears to be now for the first time figured and described.

Rufous Swallow, *Hirundo rufula*,—Hirondelle rousseline, *Fr.*—A pretty figure of the adult male. Inhabits the South and West of Africa; is rare in the North, and occasionally passes into the contiguous portions of Europe. This bird is so familiar in the interior of Africa that it enters the houses of the inhabitants, building in the sleeping-apartment of the family. The nest is a hollow ball, lined with soft materials, and the entrance consists of a long tube. Lays from four to six white eggs, sprinkled with small brown spots. Feeds on insects and larvæ. The crown of the head, black in the male, is rusty brown in the female.

Numidian Demoiselle, *Anthropoides virgo*,—Grue demoiselle, *Fr.*—An exceedingly lovely figure, rather more than half the natural size, of an adult male. Common in the North of Africa, and its great powers of flight enable it to cross the Mediterranean into Europe without difficulty. Dr. Latham states that it is found in the Southern plains about the Black and Caspian Seas, and that it is frequently seen beyond Lake Baikal, &c., but that it never occurs further North. Frequents marshes, and subsists on Snails, insects, small fish, Frogs, Lizards, &c. Mr. Gould observes that it bears confinement well, and has been known to breed in captivity. We have seen its congener, *A. Stanleyanus*, Vig., alive in the Zoological Gardens. The sexes are similar.

Short-toed Ptarmigan, *Lagopus brachydactylus*,—Tétras à-doigts-courtes, *Fr.*—The figure is somewhat under the natural size. Inhabits the extreme Northern regions of the old world, the dreary weather and intense cold of which climate its thick and compact plumage admirably adapts it to bear. The toes and greater part of the bill have a warm covering of down. Mr. Gould's specimen, received from the North of Russia, is pure white, with the exception of a few black feathers in the tail. Its habits and changes of plumage are probably very similar to those of the other Ptarmigans.—The last bird figured in this part is the

Winter Finch, *Fringilla hyemalis*,—Bruant Jacobin, *Fr.*—A male and female are represented with great beauty. Inhabits the regions far within the Arctic Circle, i common in Greenland, and has of late years been added to the European Fauna. Occasionally visits Iceland, where it is perhaps a bird of periodical passage. "Like the Robin the Winter Finch evinces little fear of Man, and readily admits his approach even in fine weather, and in hard weather is 'so gentle and tame,' says Audubon, 'that it becomes, as it were, a companion to every child,' and is indeed as well known and as much cherished by every person in America as the Robin is in Europe. It usually lives in families of twenty or thirty, and is very jealous of intrusion, and readily darts forth to repel the invader. It is particularly fond of Grass-seeds, and grain and berries of all

kinds." Audubon also states that in its habits and manners it much resembles the Sparrow, resorting for shelter during cold weather to stacks of corn and hay, but in fine weather evincing a preference for the evergreen foliage of the Holly, Cedar, low Pines, &c. Of its nest and eggs nothing is known. According to Audubon its flesh is extremely delicate and juicy, on which account it is frequently exhibited for sale. The female differs from the male in being of a lighter tinged with brown.

Campsall Hall, Jan. 4, 1839.

CORRESPONDENCE.

Supposed Popularity of Natural History.

To the Editor of the Naturalist.

Sir,—I perfectly agree with your able and very agreeable contributor, Mr. Edwin Lees, respecting the supposed popularity of Natural History. No one can regret more sincerely than myself the very slender and superficial interest taken in the study of Nature by the majority of our countrymen. The matter, however, rests in our own hands, whether or not this state of things shall continue. We must evidently begin by treating the subject in a familiar and "popular" style. There is, I think, no fear that such a course will prove in any degree detrimental; for a small medium of knowledge, duly and timely administered, only begets an increased desire for further instruction. Every one will sow and reap according to his talents, and the result will be an extensive and ever-increasing love and admiration of God's wonderful works.

As a proof, however, that a certain advance has been made in this respect, I may allude to the frequent occurrence of interesting facts relating to the animal, vegetable, and mineral kingdoms in most of our metropolitan and provincial newspapers, and the introduction of a department devoted to these subjects in many popular periodicals.

As regards the increase in the number of Journals expressly devoted to Natural History, I fear I cannot cite the circumstance in illustration of an increased inclination towards the subject. In general, periodicals of all kinds are started with a view to pecuniary gain, and their scope and objects are therefore necessarily in unison with the feelings and desires of a large class of readers. With the natural-historical press it is otherwise—here the magazine forms and increases the taste, instead of the taste forming the magazine. The *Zoological Journal* was the first to take the field, under the auspices of many able and eminent scientific men.

It was commenced in 1824, and was announced to be "complete" two or three years ago. In 1828 the enterprising Mr. Loudon set on foot the *Magazine of Natural History*. If I am rightly informed, it succeeded very well in three or four years' time, remained some time in a flourishing condition, and then again dwindled in circulation. This must, I think, have been mainly owing to the change in its conductorship, and the introduction into its pages of a more exclusively technical character. There were also the *Field Naturalist's Magazine* (edited by Mr. Rennie) and the *Zoological Magazine*, both of which ran but a brief career. Both were issued monthly, and at a small price. The former did not answer to its title sufficiently to please the public, and with the latter I am only acquainted by hearsay. Then *The Naturalist* and the *Magazine of Zoology and Botany* (now the *Annals of Natural History*) were commenced at about the same time. The former is calculated to take the place of the *Magazine of Natural History* under Mr. Loudon's management, and in some respects I even consider it superior to that Journal; the latter contains each month admirable papers; but the work is, I consider, too scientific and technical to *diffuse* a study of Natural History, which ought to be the chief object of a periodical devoted to a subject which cannot be said to be "popular" in this country.

But the progress of Natural History in public favour, though slow, is sure. I can see it in our schools, colleges, and public institutions, in our magazines and newspapers, and in various other ways. Its march cannot now be retarded.

I may in conclusion observe, that every single fact of interest observed by any of your readers ought to be duly forwarded for your inspection, and publication if desirable; for it is by recording isolated facts, in themselves apparently unimportant, that we may all render essential service to science, either in the way of suggestions or observations. Each of your readers might with advantage furnish his quota towards your "Correspondence," "Criticism," and "Chapter of Miscellanies." Let even the youngest and most inexperienced take his note-book with him into the fields, and record the actions and general economy of every quadruped gambolling in the verdant hills or along the river side, of every warbler in the cool shade, of every insect, in all their varied localities. Thus he may, in no very long time, and in a most delightful manner, gain information which many authors have alone obtained through the medium of closet study; he may rectify errors into which they have fallen; and add much that is interesting to the general stock of information.

It is, then, not Natural History, but a certain class of books on the subject, that must be voted unpopular. These books, however, are in themselves excellent; and supposing the tuition of the rising generation, as well in as out of the schools, properly conducted, those "dry" but valuable works will assuredly, before

the lapse of many "lustrums," be generally appreciated by our countrymen. Towards the attainment of an object so desirable, I conceive it to be the duty of every one who has himself conceived a partiality for the study, to contribute according to his ability.

I am, Sir,

Your obedient servant,

Nottingham, Dec. 28, 1838. G. C. Barton.

CHAPTER OF CRITICISM.

The late Dr. Latham's Papers.

To the Editor of The Naturalist.

Dear Sir,—In the interesting memoir of Dr. Latham, published in the 25th number of this Magazine (p. 26), you state that the only paper you are aware of his having published in periodicals, was an admirable article on the tracheæ of birds, in an early volume of the *Linnæan Transactions*. On looking over Donovan's *Naturalist's Repository* the other day, I found the Doctor had published at least one other paper in these Transactions, and that on Ichthyology. Donovan, in describing (Vol. III.) the Tentaculated Sawfish (*Pristis tentaculatus*), says:—"This curious species of the finny tribe was made known in the first instance through the medium of a paper written by Dr. Latham, and inserted in the second volume of the *Linnæan Transactions*, as a new species of the *Pristis* tribe."

I think it would be advisable to continue to give as perfect a list as possible of the writings of the individuals whose memoirs are published, which will render the memoirs not only more interesting, but also more perfect, and of greater value.

I remain,

Yours truly,

Law Park, near St. Andrews, Dec. 12, 1838. Henry Buist.

The Medium of Mental Power in Man and Animals.

To the Editor of the Naturalist.

My Dear Sir,—I am sorry to find myself the innocent cause of seven pages and a half of inkshed in your last number (p. 199); if, however, it be interesting to your readers, I am well satisfied. I do not feel at all disposed, on such a

subject, and in the pages of a Journal like your own, to answer your correspondent, who seems to me to have raised a dust in order to show his extraordinary power in laying it. If he had turned to his "JOHNSON" before writing, it would probably have spared him the pains he appears to have taken. In using the passage alluded to, unconnected as it was with the subject of my remarks, I certainly did not anticipate the quibbles of a caviller, or it might have assumed a less ambiguous form. However, could I think the pages of *The Naturalist* the proper medium for such a discussion, and had your correspondent not been anonymous, I might have been inclined to reply to some of his arguments. As it is, I must leave your readers to decide the question.

I remain,

Yours truly,

Campsall, Jan. 3, 1839. EDWIN LANKESTER.

[The subject discussed by "A. H." at p. 199, *et seq.*, either is or is not connected with the legitimate and declared objects of *The Naturalist.* Laying aside the question of abstract propriety, Mr. LANKESTER has very clearly intimated his own opinion of the matter. Thus in our Dec. number (Vol. IV., p. 138) he states his views concerning the mental manifestations of Man, as distinguished from those of the lower animals; "A. H." did likewise at p. 199—a proceeding condemned by Mr. L. The following must, therefore, be our present correspondent's argument, viz., that as long as Mr. LANKESTER is the writer, the subject is perfectly legitimate; but that no sooner does "A. H.," or any one else, assume the pen, than *The Naturalist* becomes an unfit medium for such discussions. Or, perhaps, while Mr. LANKESTER testifies a most laudable desire to publish his own opinions on the point, he is at the same time scandalized at the alarming idea of the impiety which should induce any man living to express views at variance with those of Mr. L.—In the next place, we do not believe that a reference to JOHNSON would affect the arguments of "A. H."—Further, the fact of the letter at p. 199 being anonymous cannot in the smallest degree invalidate its contents, seeing that they are of a purely *argumentative* nature.—Lastly, Mr. LANKESTER admits that his passage was ambiguously worded; but in so doing detracts from the candour of his avowal, by charging "A. H." with *quibbling.* This grave accusation ought not to have been left without *proof.* Taking all the circumstances into consideration, we arrive at the natural conclusion that the arguments of "A. H." are irresistible to Mr. LANKESTER. Here, therefore, we close the discussion.—ED.]

THE NATURALIST'S LITERARY PORTRAIT-GALLERY.*

(Continued from p. 146.)

No. III.—Hewett Cottrell Watson, Esq., F.L.S.

Hewett Cottrell Watson, whose portrait appears in this number of *The Naturalist*, is the son of Holland Watson, Esq., late of Congleton, in Cheshire, and Harriett, daughter of Richard Powell, Esq., formerly of Heaton-Norris, near Stockport; and grandson of Mr. James Watson, formerly of Swinton, but whose last residence was Millgate Hall, Stockport.

Mr. Powell, of Heaton-Norris (maternal grandfather of Mr. Hewett Watson), was the son of Mr. Powell, of Stannage Park, Radnorshire, whose mother was Miss Folliott, daughter and heiress of Lord Folliott, of Ballyshannon, in Ireland, the title becoming extinct from the want of male heirs.

The family predecessors of Mr. H. C. Watson never exhibited any taste for scientific pursuits; though several of them have been known as political, clerical, and typographical authors. He is great-nephew of Dr. John Watson, Rector of Stockport, author of the quarto *History of Halifax*, and of the *Memoirs of the Ancient Earls of Warren and Surrey;* the latter publication costing him £1,200, as appears by a memorandum in a MS. Family History, in the hands of his great-nephew. This Dr. Watson, of Stockport, was himself the nephew of Dr. Joseph Watson, Rector of St. Stephen's, Wallbrook, in the reign of Queen Anne, and brother-in-law to Sir John Blunt, the chief projector of the South-Sea scheme. But the parson was more honest than the baronet, for early in life he had refused the valuable living of Wilmslow, on scruples of conscience, and probably afterwards lost a bishopric through being too honest. Mr. Watson's aunt was married to Dr. Patrick Duigenan, member of the Privy Council during the Regency, and a vehement political partizan, known as the author of *An Answer to Grattan*, and other political productions. By intermarriages Mr. Watson's family is also closely connected with that of the celebrated or notorious (according to party views) Rev. Gilbert Wakefield, who died in 1801. The Rev. gentleman married Mr. W.'s father's cousin.

The family name of Hewett was derived from the Hewetts, Hewets, or Hewits (see Collins's *Baronetage*, Vol. I., p. 447), of Headley Hall, in Yorkshire. One of these, John Hewett, Doctor in Divinity, having become obnoxious to Cromwell, was found guilty of *Carlism*, and beheaded on Tower Hill, along

* This series—including zoologists, botanists, geologists, and meteorologists—will be continued every alternate month, each memoir being accompanied by a portrait and autograph.—Ed.

with his brother-in-law, Sir HENRY SLINGSBY, though Lady CLAYPOLE, daughter of the PROTECTOR, is said to have begged on her knees that Dr. HEWETT's life might be spared; and afterwards, on her own death-bed, she is reported to have upbraided her father with the death of HEWETT. He was author of various clerical writings, and is mentioned in many political publications of the time. (See CLARENDON, Vol. VI., p. 624.) A good portrait of Dr. HEWETT is in the possession of Mr. HEWETT WATSON; but he is not aware why it left the family of HEWETT in the direct line.

The following curious anecdote connected with the history of this family may be worth repeating. It is duly entered in the MS. Family History before adverted to, but whether true in all respects, is not known by the subject of our memoir:—"The House of LEEDS originates from a clerk to one of the most respectable merchants of a former age. A nursery-maid playing with the infant daughter of her master, Sir WILLIAM HEWETT (or HEWIT), Lord Mayor of London, had the misfortune accidentally to push her out of a window that fronted the river Thames. A young gentleman, of the name of OSBORNE, and ancestor in a direct line to the present Duke of LEEDS (1780), immediately plunging into the water, at the hazard of his own life, saved that of the child. Sir WILLIAM afterwards gave his daughter in marriage, with an immense fortune, to Mr. OSBORNE. Several of the nobility, and particularly the Earl of SHREWSBURY, had desired to pay their addresses to the young lady; but Sir WILLIAM declared that OSBORNE should possess what he so gallantly had preserved. The present family preserve the picture of the Lord Mayor, at Kiveton House, in Nottinghamshire."

Mr. WATSON's family, on the paternal side, for some generations, has been more prolific in females than in males; and in consequence he has few known relatives bearing the same surname, common as it is in most of the Northern counties. His seven sisters were married respectively to the late Mr. S. F. HEYS (uncle of the present Earl of WINTERTON),—Major SPENCE, of the 31st Foot,—the late Mr. GEORGE SCHOLES, of Manchester, Banker,—Mr. J. BULKELEY JOHNSON, of Park Place, London,—Captain WAKEFIELD, of the 36th Foot,—Mr. J. H. LLOYD, of the Inner Temple,—and Mr. W. GARTON, of Kent Terrace, Regent's Park. His two brothers (extravagant young men) entered the service of the East-India Company, and one of them, Lieutenant HOLLAND WATSON, of the Company's European Regiment, died suddenly last Summer.

Mr. HEWETT WATSON was born May 9, 1804, at Park Hill, near Firkeck, Yorkshire, where his father was resident for a short period. From that place his family removed to Worksop, in Nottinghamshire; and afterwards to Congleton, Cheshire, for which county his father was many years a magistrate. This removal to Congleton is the earliest occurrence in his life remembered by him; but for a considerable period following this removal he has no recollection of any

thing. He was at that time about three or four years old, and it greatly puzzled his very juvenile mind how "Toby" (his father's favourite Horse) was to accomplish his journey; the solution of the difficulty being at last hit upon, by the brilliant conception that "Toby" should ride on the top of the carriage.

The first inhabitant of Congleton known to young WATSON, was a gardener who had become a sort of fixture on the property purchased by his father; and he and this gardener soon became most attached friends. The circumstance probably contributed, in connection with his mother's taste for floriculture, to give young WATSON a partiality for flowers; as a child at home, and subsequently as a schoolboy, his garden was the chief amusement of his play-hours. A moderate endowment of Veneration, combined with his early bias to plants, probably preserved him from the family taste for Topography, Heraldry, Antiquities, and other things of past days.

Like all other boys in and about Congleton, young WATSON was sent to the Grammar School of the town, as a day-scholar, where were assembled the lads of all grades, from the sons of the country squires to those of the petty shopkeepers and artizans, to be drilled with Bibles and Latin Grammars; for both of which young WATSON speedily acquired a most intense hatred, the Bible, like the Grammar, being injudiciously converted into a task-book. This school was conducted in the ordinary routine of old Grammar-schools, and young WATSON left it after a few years, with the reputation of being an incorrigible dunce.

Fortunately he was next placed under the care of the Rev. J. BELL, of Alderley, where a better system prevailed, though still too much based on a preference to Greek and Latin before all useful knowledge. But the latter then had some, and probably now has more, place in the school routine. Under a better system of management and instruction, he gradually emerged from the degraded class of dunce-ship, and finally sat for two years at the head of Mr. BELL's school of thirty-two boys. It is well worthy of note, that at the first school, which he left with the character of a dunce, he had been beaten weekly, not to say daily; whilst during the six years he remained with Mr. BELL, he never received a blow from his master. Though Mr. BELL, like most clerical teachers, was a stickler for scholastic learning, he had the good judgment and kindness to allow his pupils the use of books on science, history, and amusement, from his own private library; a privilege of which young WATSON often availed himself on Winter evenings, as a relief from the eternal dullness of Greek and Latin—Greek and Latin—Greek and Latin.

At the age of nearly seventeen, he finally left school, still a raw lad, ignorant of the world, of the arts and institutions of his own country, and ignorant almost of all the practical duties of life; but at the same time full of absurdities about the greatness of Greece and Rome, the quarrels and amours of their gods and goddesses, and the vast importance of Latin versification; the small relief to this beautiful

mental picture being some confused notions touching the elements of science, acquired from his master's library; and some practical knowledge of rural matters, such as floriculture, Pig-killing, and weather-foretelling, given to him by the old gardener at Congleton.

It was the wish of his father that Mr. Hewett Watson should embrace the legal profession; but he was held to be of too reserved disposition, and too little gifted with oratorical ability, for the duties of the Bar; and he had, moreover, conceived a particular distaste at the idea of being sent to learn more Latin and Greek at Oxford. He was in consequence articled to Messrs. Jackson, of Manchester, solicitors. In two years he tired of the town or of the Law, and transferred himself to Liverpool, where he remained about eighteen months.

It was whilst in Liverpool that he became acquainted with Dr. Cameron, who had acquired some knowledge of Phrenology in Edinburgh. At the Doctor's advice Mr. Watson read the works on Phrenology, and the perusal of these gave him a strong wish to attain some knowledge of the medical sciences. This wish, and the desire of forming an acquaintance with the Combes, induced him to drop all thoughts of the Law, and to become a student of Medicine in the University of Edinburgh, where he passed four Sessions, 1828—1832; but not keeping the terms so exactly as to have entitled him to a medical degree, had he been disposed to present himself for the usual examination. He was not long in discovering that a knowledge of the medical sciences was a very different matter from the practice of the medical art, and that the latter would be discordant to his tastes and habits.

During the preceding years his fondness for plants had continued; gradually changing from floriculture to the study of botanical science. He had also given some attention to Zoology, more particularly in the departments of Ornithology and Entomology. These studies would doubtless have been more fully persevered in, had not an increasing preference for phrenological pursuits drawn his attention from the others. Of course these different branches of science, together with his medical studies, occupied his time fully, and interfered with each other so far as to prevent the acquirement of great skill in any one of them. His election to the Senior President's Chair, in the Royal Medical Society of Edinburgh, in the Session of 1831—2, showed that he was still following up the study of Medicine, whilst his having received the first botanical prize, the gold medal of the Professor of Botany, in the preceding Spring, proved that he was still attending to Botany. The subject of the essay was "On the Geographical Distribution of Plants," and Mr. Watson intimates that he was induced to become a competitor for the medal in consequence of a sneering taunt against the ability of phrenologists, uttered in his presence by a gentleman whom he believed to be also a competitor for the same prize. The preparation of this essay was probably instrumental in confirming Mr. Watson's taste for that particular department of Botany.

In January, 1833, Mr. WATSON finally quitted Edinburgh, and went to reside with his brother-in-law, Captain WAKEFIELD, near Barnstaple. But not liking this neighbourhood, he settled in Thames-Ditton, fifteen miles South of London, at the end of the same year; and there he still resides, on a moderate independency.

At the close of 1832 Mr. WATSON printed his *Outlines of the Geographical Distribution of British Plants*, which he considered too imperfect a work for publication, although the bringing together its materials had required much patience and labour, as being the first work of its kind published in this country, except a few short essays on local Botany.

In 1835 he published the *Remarks on the Geographical Distribution of British Plants*, and also the first volume of *The New Botanist's Guide;* the second volume of the latter work following it in 1837. These were intended, the latter as a collection of details, the former as a generalised sketch, on which he might found a larger and more comprehensive work, in the preparation of which the author is now engaged. But as this larger work will take several years to complete, it will probably be printed in successive Parts, for private distribution amongst persons of congenial taste; Mr. WATSON being averse to publish parts of a work which he may not live to complete.

Mr. WATSON has also contributed various articles to the *Magazine of Natural History*, the *Edinburgh New Philosophical Journal*, *The Naturalist*, and other periodicals, on subjects connected with Botany, Entomology, and Meteorology. In consequence of illiberal reports which have been repeated to him, he requests us distinctly to state, that he publishes all his works with a certainty of pecuniary loss, and that he would decline to receive payment for any article sent to a periodical.

In 1836 Mr. WATSON published a 12mo. volume entitled *Statistics of Phrenology;* for the purpose, as he stated, of encouraging phrenologists, by showing that their science was making great and rapid progress in public estimation. This work is nearly out of print, and will not be re-printed, its purpose having in the author's opinion been effected. In the same year his friendship and esteem for Mr. COMBE induced him to write and publish his *Examination of Mr. Scott's Attack on Mr. Combe's "Constitution of Man."* This pamphlet was speedily out of print in London, only a hundred copies having been sent to the Publishers there, and no second supply being given to them. It is probably by this time out of print in Edinburgh, to which city a much larger supply was sent.

In the Autumn of 1837, Mr. WATSON obtained the copyright of the *Phrenological Journal* from Messrs. COMBE and SIMPSON, and became its Editor as well as Proprietor; commencing a New Series, somewhat changed in plan, though it was not until January 1839, that his name appeared on the cover as the avowed

Editor. His time being now evidently given much more to Phrenology than to his other favourite study of Botany, it is probable that the printing of his enlarged botanical work will proceed slowly.

The natural bent of Mr. Watson's mind adapts him much better to the study of sciences involving causation and exact reasoning, than to the pursuit of Botany or Natural History. The leading characteristics exhibited in his writings are the phrenological faculties of Causality, Comparison, Individuality, and Order; those of Language, Eventuality, Time, and Number being less indicated. From the former proceeds the tendency to collect and state facts, to arrange them, and to reason upon them, which so much prevails in Mr. Watson's works; whilst a certain abruptness of expression, a paucity of words, and a want of continuity in narration, are consequent on a lower endowment of the latter faculties.

These peculiarities, combined with much Cautiousness, Destructiveness, Concentrativeness, Firmness, Self-Esteem, and Benevolence, less Imitation and Love-of-Approbation, and much less Veneration and Wonder (in speaking of a phrenologist we use the terms of his own science), stamp the effusions of Mr. Watson's pen with a degree of hardness and even asperity, a disregard of names and authorities, a refusal to take opinions on trust, and a proneness to defend any party or cause ungenerously assailed by others.

Mr. Watson is the son of a strictly Tory father, and associated almost exclusively with persons of the same political bias until he had attained his legal majority. He is now a renegade from Toryism, and a Dissenter from the Church of England; but connected with no one party in Politics.

* * * * * * * * * *

Our portrait of Mr. Watson is drawn by Mr. Haghe (himself a phrenologist), especial care being taken with the shape of the head, which will to a certain extent confirm our remarks, *ante*, on Mr. W.'s mental powers.

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

GEOLOGICAL SOCIETY.

The ordinary meetings were resumed Jan. 9, 1839, the Rev. Prof. Whewell, F.R.S., in the chair.—The members elected were the Rev. S. Wilberforce, the Rev. J. Binton, and Dr. Griffiths; and among the presents announced were a series of maps representing the Coal-fields of Wales, from Mr. Murchison, and Mr. Darwin's illustrations of the Geology of South America. Dr. Harland,

Prof. of Zool. in Pennsylvania, from whence he has just arrived, then addressed the meeting on the fossil bones of North America, taking a rapid and cursory review of the various geological discoveries that have been made in that country, and illustrating the same by an extensive collection of specimens. The most recent and interesting consisted of the teeth and ribs of an animal which would appear to have been of gigantic size, but respecting which only conjectures could be formed; one of the ribs alone measured from 200 to 300 feet in length; whilst the jaws and teeth were of proportionate dimensions. It was considered by the lecturer to be allied to the Manatic, or Sea-cow, and named by him *Basilosauros*. Another extraordinary specimen was the lower jaw of a species of Saurian, about ten feet long, which was discovered within the past year in Alabama, imbedded in hard blue Limestone rock.—Professor Owen, F.R.S., next read a paper on *Basilosauros*, with the view of proving, from his recent examination of its mortal remains, that it was the link which connected Mammiferous animals with *Cetacea*; and the Society then adjourned.

METEOROLOGICAL SOCIETY.

Jan. 8.—Dr. M'Intyre, V.-P., in the chair.—A communication was read from Mr. J. H. Maverley, of the Royal Academy of Gosport, on the weather of December last, which he described as alternately wet and fine, with a pretty high atmospheric pressure, the mean temperature of the month being but little short of the mean temperature of December for several years. The thunder-storm on the 2nd was of rain, hail, wind, thunder, and lightning, and came on suddenly from the South-West, at fifteen minutes past ten, p. m. The hailstones were not coated with snow, but were solid pieces of ice, in a great variety of forms, from five to seven being joined firmly together in solid masses of transparent ice. In twenty minutes no less than three-quarters of an inch of rain and dissolved ice fell. The meteors seen previous to the commencement of the storm, between seven and ten, p. m., were ninety-seven, of which fifty-six were East, and forty-one West, of the meridian. Seven of these had long sparkling trains, and passed through spaces of 20° to 30°. The author of this paper conjectures the meteors to have been generated by means of a gaseous fluid mixing with the lower medium of the atmosphere, which he considered to be highly electric, as it had rained all day with a rising barometer.—The Secretary next read a paper from Mr. J. G. Tatem, on the excess of rain at Wendover over that which falls at High Wycombe, although these places are but nine miles apart, and which in 1838 was not less than four inches and a half. He attributed this to a local cause in the deviation of height in the hills that were in proximity, and an accompanying register showed that the mean temperature of Wendover was 45. 35; the quantity of rain fallen, 29. 245 in.; and the number of days of rain, 161.

ENTOMOLOGICAL SOCIETY.

Dec. 3.—G. R. Waterhouse, Esq., in the chair.—An extensive list of donations of entomological works from the Entomological Society of France, &c., was announced. A new species of Wasp was exhibited by the Secretary, communicated by Mr. Thwaites of Bristol, and named *Epipone melanocephala*, Gmel. Mr. Bagster exhibited a green-house plant rendered unsightly by the attacks of a minute insect. Mr. Westwood read the description of a minute insect which had been discovered within *Spongilla fluviatilis*, the common English fresh-water Sponge, by J. Hogg, Esq.; and which, from the continued motion of its sub-abdominal filaments, was presumed to be the cause of the undulations in the water which have very recently been insisted upon, by several eminent French zoologists, as proofs of the animality of that substance. (See *The Athenæum*, No. 579.) There was also read the commencement of a memoir, by Mr. A. White, containing descriptions of some new exotic species of *Hemiptera*.

LINNÆAN SOCIETY.

Nov. 6.—The Chairman announced to the meeting that the late Mr. Nathaniel Winch, of Newcastle-upon-Tyne, had bequeathed to the town his entire herbarium, consisting of upwards of 12,000 species of plants, together with his library of Natural History. [We understand that Mr. Winch has bequeathed to the Geological Society his collection of minerals, rocks, and organic remains.—Ed.]

WARRINGTON NATURAL-HISTORY SOCIETY.

We hail with unalloyed satisfaction and pleasure the honorable part Warrington is taking in the advancement and diffusion of science, and thereby of happiness also. It is already in possession of a Phrenological Society; and on the 23rd of November, 1838, a Natural-History Society was established in the town. Here follow the rules of the latter Institution:—

1. That this Society shall be denominated "The Warrington Natural-History Society;" the design of its establishment being the promotion of the various branches of Natural History, together with Antiquities, by the formation of a museum and library, the reading of papers, &c.; 2. That it shall consist of resident and non-resident members. All members to be elected by ballot; a majority of black balls to exclude; and if the numbers are equal, the chairman shall decide; 3. That the subscription—to be paid by resident members only—shall be *five shillings annually*, paid in advance; 4. That persons residing at a distance from Warrington who contribute to the museum or library, or in any other manner render assistance to the Society, shall be eligible as non-resident

members; 5. That the officers shall be elected on the second Wednesday in November, and consist of a president, two vice-presidents, a treasurer, corresponding secretary, secretary, librarian, and six honorary curators, viz., two zoological, one for *Vertebrata* and one for *Invertebrata*, a conchological, botanical, geological, and a curator of Antiquities; 6. That the curators shall, in addition to attending to their respective departments, form a committee, which shall superintend the distribution of duplicate specimens; and that such distribution shall take place half-yearly; 7. That the subscribers shall have power to give tickets of admission to the museum; 8. That the meetings of the Society shall be held every Wednesday fortnight. The chair to be taken at 7, p.m., and vacated at 9.

Mr. W. Wilson, the well-known botanist, is president, and our indefatigable correspondent, Mr. Rylands, holds the double office of corresponding secretary and curator for *Invertebrata*.

The Institution, it will be perceived, adopts the principles of universal suffrage, annual parliaments, vote by ballot, and—we may almost say—no property qualification, in its government. So far good. But there are two or three points to which we would beg particular attention. In the first place, the annual subscription is so exceedingly small, that no lover of Nature need be prevented from joining the Society on account of the ruinous extent of the periodical fee. We therefore hope to find persons of all classes, from the wealthy squire to the industrious artizan, meeting here under one common standard, and with one common aim—the improvement of each and every grade of society. The fourth rule, likewise, is judicious, since it ensures the Institution against all *idle* honorary members. We seriously recommend those of our readers who do not enjoy the blessings consequent on a residence in Warrington to become "eligible" as honorary members without delay, by contributing towards the museum or library, or both. And in order to prove that we are willing to volunteer something more substantial and less plentiful than the commodity yclept "advice," we may state that we intend to qualify forthwith: to make sure of the valuable donation being *bonâ fide* delivered, we shall, moreover, doubtless add a conditional codicil to our will, whereby an honorary membership may be procured for some ambitious relative. But, in sober seriousness, we do hope to see specimens and books pouring in freely upon the Society, lest its curators and librarian, accustomed to consider their several posts as so many sinecures, rebel and resign when they actually find some business on their hands.

In the next place, we cannot but commend the plan of electing really zealous honorary curators, and likewise one for each department of Natural History. This is a very important point, and cannot fail to produce the best results. Where a "professional" naturalist is employed, with a comfortable salary, he is too apt to prove the lamentable fact that he is but human; he only performs just

what he considers his duty, and that merely with the view of "remaining in office." Honorary curators, on the other hand, if judiciously selected, will necessarily feel a pride in carrying the museum to the utmost possible point of perfection.

At a future opportunity we may perhaps "report progress." Most assuredly we shall keep our eyes steadily on the Institution, and would recommend it to beware of incurring our mighty displeasure. Thus far we like the "face of affairs." Only let the Society proceed with the activity and intelligence employed in its establishment, and it will fulfil the object of its existence speedily and surely.

CHELTENHAM LITERARY AND PHILOSOPHICAL INSTITUTION.

We now proceed to present our readers, according to promise, with a brief abstract of Mr. Lees' recent lectures at Cheltenham. The reports are gathered from three distinct numbers of the *Looker-On* of that fashionable watering place:—

On Tuesday evening, Dec. 4, Mr. Edwin Lees, the eminent naturalist, commenced a course of lectures on "The Phenomena of Vegetation as connected with the History, and harmonizing with the Sympathies, of Mankind in general." He commenced his discourse by an elegant appeal in favour of Botany, and illustrative of its beauty and importance in the economy of creation, sketching a vivid picture of a world devoid of vegetation, in contrast with one clothed with the rich verdure and bloom which distinguishes the present habitable globe. The effect which the improvements of civilization exercise upon the development of vegetable life was described, and how the vegetable world was rendered essential to the happiness and even existence of Mankind. The use and importance of plants and flowers in their various relations to Man were pointed out, and exemplified by the instance of the Grasses, a numeration of the different tribes and varieties of which was given, and many highly interesting statistical particulars furnished respecting the consumption of Corn in its divers states and combinations. The important improvements effected in the vegetable world by cultivation were dwelt upon, and the changes in the quality and nature of plants, flowers, and fruits, instanced by a number of familiar illustrations, proving how the crude productions of the wild or savage state were, by cultivation, converted into the richest luxuries of civilized life. Mr. Lees next referred to the numerous uses to which, in the service of Man, plants were applicable, and to the valuable consequences which had resulted from the discovery of the healing properties which many of them possess. Various superstitious rites and ceremonies, dominant in the dark and middle ages, were shown to have originated in this same course; the existence of such rites among all people, was illustrated by the numberless allusions of Poetry, and by

the monuments and traditions of antiquity, which demonstrate their influence in the "old religions" of the world. In that of Druidism the veneration for the Mistletoe was a distinguished and important feature; and among the classic nations of Greece and Rome the supposed mysterious potency of certain plants formed the subject of frequent poetic allusion. And it was shown that down to the present day the charmed agencies of the vegetable world were recognized with fear and trembling, in many of the superstitious customs and observances of the retired and rural districts even of our own island. From these again had sprung a class of more harmless fictions, identified with the sympathies and affections of youth, and the hopes and fears of virgin love. The Fern-seed and the Poppy-leaf had hence ascribed to them mysterious influences, in illustration of which the lecturer related several curious anecdotes. Mr. Lees next considered the associations which plants and flowers awaken at every stage and period of existence, and under every possible variety of circumstance—the floral rambles of boyhood, and the botanical excursions of riper years, being alike replete with bright and graceful recollections, to which the mind always recurred with a sense of exquisite delight. The yearning of the heart for the dreams of its early pleasures, was strikingly evinced in the case of the "pent-up citizen," who cherishes some dingy and bloomless evergreen, as a talisman to the floral associations of his youth—associations which hold mysterious mastery over the mind even to the hour of death. The intensity of the sympathies which plants and flowers originate in the minds of botanists and travellers was exemplified by reference to the feelings of Humboldt, whose eloquent description of those feelings on his revisiting the scenes of former pleasures, was quoted. Having thus borne testimony to the importance of the phenomena of vegetation, as connected with the sympathies of Mankind in general, Mr. Lees advanced to the consideration of Botany as a science ranking high in estimation, from the value of those extraordinary healing properties peculiar to a great number of plants. He explained, first, the general divisions of the science, which was followed by a brief description of the organized functions of plants. He then traced the history of Botany from the date of its earliest mention by ancient authors, down to the time of Linnæus, whose discoveries drew forth a just and eloquent eulogium. Mr. Lees then proceeded to give an outline of the Linnæan system, embracing the various scientific arrangements of its immortal founder—illustrating these by means of coloured drawings of different plants and flowers, selected as types of the orders and classes which they respectively represented. Having thus examined the leading features of the Linnæan system, he next gave a concise view of the natural system of Jussieu, which recognises in the cotyledons of the plant the *principle* of scientific classification and arrangement. The leading peculiarities of the two admitted systems being thus disposed of, Mr. Lees next proceeded to elucidate

the phenomena of distribution and propagation, both of which "mysteries" he illustrated by reference to numerous recorded facts and interesting anecdotes, as he did also the geographical and geological influences affecting the growth and development of particular tribes and plants, and with this, and a pleasant anecdote of the enthusiasm of a mountain botanist, the lecture concluded.

Mr. Edwin Lees delivered the second lecture of his course before a very numerous audience, on Dec. 11. The subject of the discourse was—trees considered in their various relations with Man. Previous, however, to entering upon their consideration, Mr. Lees took a cursory review of the primary vegetation of the globe, the extent and importance of which were illustrated by reference to the Coal-fields of our own and other countries. The immense forests of ancient Gaul, Germany, and Scotland, and the existing ones of America and Norway, were instanced as examples of the quantity of wood which, in the various epochs of the world's history, had successively covered its surface, and which, while supplying Man with protection and shelter, and convertible by him to numerous uses for the purposes of life, were also the scenes of the most diabolical superstitions. The effects which woodland scenery produce upon the mind, when viewed in different periods of its growth and development, were glanced at, and Mr. Lees then proceeded to treat his subject more in detail, by considering trees—first, as objects of utility: by Man, in every stage of his history, their importance had been felt and acknowledged; to them the primitive inhabitants of every country were indebted for their food, for shelter, for their weapons of attack and defence; and civilized society was under greater obligations to trees—considered as objects of utility—than to any of the other materials which Nature supplied for the use and sustenance of Man. Viewed in connexion with the rights and superstitions of the dark ages, trees afforded many awful and instructive lessons. The broad depths of the ancient forests among savage nations were the scenes of orgies of the most diabolical description, the mere recital of which now excites our wonder how beings endowed with intellect could ever have invented the infernal rights which, it is well known, were practised in the dark woods of Gaul and Britain by our own Druidical ancestors. Superstition had indeed peculiarly identified itself with the sombre forest and the gay greenwood: the imaginative mythology of Greece and Rome had peopled their sacred groves with a race of more poetical forms than those which stalked in savage grandeur through the dark haunts of Celtic and Scandinavian forests, but it was superstition still, modified only by the circumstances of the time, and adapted to the peculiar character of the countries, and the dispositions and habits of the people. In illustration of the veneration entertained for trees, by Greece and Rome, Mr. Lees quoted a number of beautiful and apposite allusions, chiefly from the classic poets. The fantastic forms occasionally exhibited by trees frequently almost justified the fear which the

bewildered traveller felt on encountering them in his twilight journey, and served to confirm in his mind those early impressions which had associated superstitions the most awful with the giant Oak or the mysterious Yew: traces of such were yet to be found in many parts of our own island, where the lingering of Druidic lore was still to be detected in the tales and legends of the mountain and the stream, the sacred Mistletoe, and the bright green Holly. From the consideration of these topics the lecturer proceeded to describe the picturesque effect of trees in landscape scenery, the peculiar character of the vegetation of different countries as influencing and determining these effects, and the fashions of various ages in respect of gardening and planting; all of which were successively treated in animated and vivid language. The pictorial and poetical associations formed in the mind in reference to trees in general, and to some peculiar kinds in particular, were dwelt upon, and many of those childhood incidents, which hallow the recollections of former years, were all feelingly depicted. The incidents which serve to awaken such early impressions were referred to, and exemplified by several well-authenticated and highly-interesting anecdotes, showing the existence of the feeling universally. The Indian and the Laplander, the Chinese, the Mexican, and the Australian, all owned alike the potency of that spell which the sight of the trees of their native land was capable of exciting in their minds. From these various considerations of the interest and importance which attach to trees as the fair garniture and glory of a country, Mr. Lees passed on to describe the peculiarities of their external appearance and botanical characteristics, their internal structure, process of growth, and the longevity to which the principal trees of Britain attain; enumerating many instances of Yews, Oaks, &c., which had arrived at ages varying from *one to five thousand years*. This part of the lecture, which was peculiarly instructive, we regret we are unable to report so fully as we could desire; the great variety of pleasing and remarkable facts collected in illustration of the subject being all of the most interesting description.

The lecture was listened to with the utmost attention, and frequently interrupted by the applause of a delighted auditory.

On Dec. 18 there was a numerous attendance of the members to hear Mr. Lees' concluding lecture on the phenomena of vegetation. After a few introductory observations on the pleasures incident to the study of Botany, the lecturer described the objects and advantages of scientific classification, and pointed out the peculiarities of the botanical nomenclature. The strange properties ascribed by vulgar credulity to many of the common plants and flowers, and the simples and panaceas which the village doctresses compounded from them, were detailed; and in connexion with rustic life the origin of those floralian festivals common to all countries were examined. From plants of rejoicing and festivity Mr. Lees passed on to consider another class, associated with the darker rites of enchant-

ment, particularizing many of those most celebrated in the annals of witchcraft, and the ignorant superstitions of the middle ages, such, for example, as the Mountain-ash, the Holly, &c. &c. He next proceeded to give an account of the floral emblems assumed by different clans and peoples, as badges of national distinction, such as the Thistle of Scotland, the Shamrock of Ireland, the Leek of Wales, &c. This was followed by an ingenious series of comparisons between plants and animals, considered as to their functions, growth, and decay. The physiology of vegetation was examined, and the approximation in structure to the zoophyte illustrated by numerous examples, and by a beautiful little anecdote of the Orange-tree. The organs common alike to plants and animals were described, and an able and lucid exposition given of the sleep and wars of the former, the various modes of dissemination, propagation and reproduction, and the harmony of the vegetable and the animal kingdom. The lecturer concluded with an appeal to the audience in favour of the subjects which had been brought under review during the course, and urging upon their attention the pleasures and advantages arising from the study of Botany upon scientific principles. Mr. Lees having terminated his course, a vote of thanks was proposed to him by the Secretary, and carried by acclamation.

On the 24th of Dec. the Members of the Society held their second Conversazione of the session. Shortly before eight o'clock the President of the Institution took the chair, and opened the business of the meeting with a few preparatory remarks; after which the Rev. F. W. Hope, Vice-President of the Entomological Society, read a paper on the destructive ravages of the Aphis Blight and Wire Worms among the agricultural crops of the country, in which much valuable practical information was communicated.

At the close of Mr. Hope's paper the accustomed interval was allowed for refreshment and conversation, and for examining the contents of the Society's museum, which was lighted up for the occasion. These matters having been discussed, and the audience returned to their places in the lecture-room, Mr. Edwin Lees proceeded to read some highly instructive observations on the Natural History of the Mistletoe, as also on the superstitious rites and ceremonies with which in the times of old that famous plant had been identified; and furnishing much valuable and interesting information on its botanical and historical character. We regret exceedingly that the limits reserved for our report of the admirable papers read before this meeting are too contracted to admit of our presenting any outline of their contents, but we may probably avail ourselves of ampler time and space to do so in our next number. The Rev. J. Walker proposed a vote of thanks to both gentlemen for their valuable communications, which was seconded by the Rev. S. Middleton, and carried *nem. con.*

GLOUCESTERSHIRE ZOOLOGICAL SOCIETY.

The annual meeting was held Jan. 2, 1839, at the Montpellier Spa, Cheltenham, Henry Norwood Trye, Esq., in the chair.—Mr. Trye opened the business of the meeting by calling upon the Secretary to read the report of the committee of management for the past year. This document furnished a brief outline of the various works performed in the gardens previous and subsequent to their opening, and discussed other matters connected therewith; interesting possibly to the Society itself, but scarcely so to the public at large. The most important of these was the recommendation that shareholders should be allowed the privilege of free admission into the gardens, according to the number of shares respectively held by each. That the owner of five shares, for example, should have a single admission; and that the owner of twenty shares should enjoy the privilege of introducing his family on all *ordinary* occasions into the gardens; while to subscribers for fifty shares and upwards the right of admission it was proposed should also extend to the *extraordinary* occasions, such as the floral exhibitions, &c. The report likewise recommended that those shareholders who held a less number of shares than five, should, in the event of their becoming subscribers, be allowed a deduction from the fixed amount of subscription to the gardens at the rate of five per cent. After some explanatory discussions had been gone through, the report containing these important recommendations was adopted by the meeting, and ordered to be acted upon at once. Votes of thanks to the committee of management and to the donors of zoological specimens were then passed *nem. con.*, and the new committee of management having been elected, the meeting was dissolved.

NATURAL-HISTORY SOCIETY OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

From the *Berwick Advertiser* we learn that this Society held its third general meeting Dec. 17, John Adamson, Esq., in the chair.—Mr. Hutton read a paper by Mr. David Milne, Advocate, Hon. Memb. of the Society. A part of this communication was brought before the Geological Section of the British Association at the recent meeting. It was illustrated by a map, showing the outcrop of most of the principal Limestones and Coal-seams, together with the dykes and slips which occur in the district; also by various sections, showing the relative positions of the different strata. It would be impossible in our limited space to give an analysis of this interesting paper; but we may notice that it clearly proved the Coal of Berwick and North Durham to be in a position far below and consequently older than the Newcastle strata; also that the red rocks of the North of Northumberland and the Tweed are very ancient members of the Car-

boniferous formation. The thanks of the Society were voted to Mr. MILNE for his valuable communication, and it was determined to request him to allow of its publication in the Transactions.

REVIEWS OF NEW PUBLICATIONS.

The Rose-Fancier's Manual. By Mrs. GORE. London: *Henry Colburn*, Great Marlborough Street. 1838. 8vo. pp. 434.

ALTHOUGH we have the assurance of CHARLES WATERTON that a lady can never be a good ornithologist, we are not aware that the fair sex has ever been declared incompetent to Rose-fancying. Had such an assertion gone forth, we should have suspected Mrs. GORE of publishing her work principally with a view of proving either that the statement was false, or else that she was an exception to a general rule. We intend no fulsome flattery or empty compliment to our authoress, since her production enjoys a full share of the failings incident to other human labours; but if, on the one hand, a critical eye notices a *non sequitur* or an undue assumption here and there in important points, Mrs. GORE must, on the other hand, at least receive credit for a scientific earnestness, an impartiality, and a desire to attain the truth, which we would gladly notice in many works of higher pretensions and more elaborate execution. A *desire* for truth brings us half-way towards its attainment; the *power* of acquiring it completes the object in view.

Gardening has for many years been a rising art in Britain, partly through the beneficial influence of the Horticultural Society of London, partly from the zealous and indefatigable exertions of Mr. LOUDON and other enlightened naturalists in its behalf, and in different degrees through various other causes. In the culture of Roses, however, we appear to be excelled by the French. Mrs. GORE's residence on the Continent, consequently, affords her a favourable centre for her researches.

Our authoress considers that there are only three species of Roses, viz.: *Rosa simplicifolia* (or *berberifolia*), *R. lutea*, and *R. mutabilis*, and to these three she traces all the existing varieties throughout the globe. On this point we extract as follows:—

"Our motives for the adoption of three species, in preference to the multitude lately created, are as follows. Accepting as specific characters only such as are invariable, and having minutely examined the organic distinctions between all the species of Roses now in existence, we decide that only two characters are invariable—a pure yellow colour, as opposed to white or red; and single leaves, as opposed to composite. All the Roses in existence we consider but as varieties derived from these fundamental types, the mere result of accident or difference of culture or

climate. The Roses of Asia, for instance, resemble each other; the Roses of America resemble each other; while we find the greatest difference of aspect between the Roses of Asia and the Roses of America, and the characters of each may be changed by transplantation to a different climate and mode of cultivation. But no change of climate or cultivation has ever served to convert a yellow Rose into a red one; or to produce composite leaves on a fertile Barberry-leaved Rose, or single leaves on a fertile *Rosa lutea*."—p. 60.

This, if true, is curious, seeing that changes of *colour*, both in the animal and vegetable kingdoms, are perhaps more easily produced than those of any other kind. Mrs. Gore briefly characterises her three species thus:—*Rosa simplicifolia*, flowers pure yellow, thorns (in the natural state) composite, leave single; *R. lutea*, flowers pure yellow, thorns single, leaves composite; *R. mutabilis*, flowers pink, but varying from white to crimson, thorns simple, leaves composite.

We might break a literary lance with Mrs. Gore respecting an illustration introduced in support of one of her arguments, at p. 66, but our space forbids us. In conclusion, we may express an opinion that this treatise on the Rose in general, and its varieties in particular, will prove both instructive and interesting to the "fanciers" of that lovely shrub.

The Little English Flora; or a Botanical and Popular Account of all our common Field Flowers. With Engravings on Steel of every Species. By G. W. Francis, Author of the *Analysis of British Ferns*, &c. London: *Simpkin, Marshall, & Co.* 1839. 12mo. pp. 174.

The author is induced to offer the present work to public notice in consequence of "the very favourable reception" of his recently-published work on the Ferns. The style and objects of the two works are, however, widely dissimilar. The *Analysis of the British Ferns* was intended for botanists, whilst the *Little English Flora* is addressed to those yet outside the portals of the temple of science, but desirous of entering within them. The plan of the work embraces a series of figures of the commoner wild plants, amounting to two hundred and eighty, with descriptions of the plants, in which botanical technicalities are rendered into as easy language as is compatible with exactness, the whole interspersed with light scraps of knowledge respecting their uses, anecdotes, and poetical gleanings. The figures of the plants are very minute, twenty species on each plate; but for the most part they are excellent representations of the general appearance or habits of the plants, although the technical distinctions of the genera, and often those of the species, are unavoidably lost in the minuteness of the figures. The volume is very neatly got up, and just the thing for a present to a young lady (or gentleman) desirous of acquiring some knowledge of wild plants by easy steps into Botany. Mr. Francis falls into the common error of botanists in recommending students *first* to study the verbal descriptions, and in case of any doubt as to the

identity of his plant, "he must refer to the plate *last*, to see it that and his specimen agree with each other." This is advice to render the acquisition of knowledge tedious, and if it were really followed, many a young botanist would never look at the plates, for the previous description would soon give him a sufficient disrelish of Botany. In the commencement of any scientific study, the first object should be the giving of ideas. Words are not ideas, and give no information to those who have not already ideas formed in the mind. But when a youth has seen and examined a number of plants, or plates of plants, he has laid up a stock of ideas, and is in a fit state for understanding the written descriptions of them. Besides, a correct figure must be a better representation of a plant or any other natural object, than the most careful description; the eye and the brain seize it at once as a whole; whereas the reduction of verbal descriptions into correct mental images of things, is slow and uncertain. We say to the young botanist, first compare your plant with plates, and then read the description of that species, the figure of which seems to yourself most like your own plant, whose name or qualities you desire to learn. This is the natural, and always the favourite mode of study, and being inevitably so from the laws of mental action, it is idle to attempt to set it aside, by the advice of first learning words and then ideas. Every child is a lover of flowers, but not one in a thousand becomes fond of Botany, and the cause of this is less in the children than in the writers on Botany.

Contrary to Mr. Francis's direction, we recommend specimens to be fastened on paper with very thin glue. All the best collections we have seen are thus fastened, and experience has convinced us of its superiority over gum or gum-paper. To dry plants well, *plenty* of soft paper should be used, and no change till the specimens are dry.—H. C. W.

LITERARY INTELLIGENCE.

Preparing for publication, *The Fishes of Madeira*, by R. T. Lowe, M.A., with original figures of each species, from Nature. To be completed in about thirty monthly numbers, each containing four plates.—Part ii. of Bell's *British Reptiles* is published this day; and the third and last number will shortly be issued.—Yarrell's *British Birds* has reached its tenth, and Jones's *Animal Kingdom* its fourth, part.

NOTICE OF THE LATE COL. MONTAGU.

Died, Aug. 28, 1815, at Knowle House, Devonshire, in his 64th year, George Montagu, Esq., many years a Lieutenant-Colonel of the Wiltshire Militia. He possessed talents of the highest order; and as a writer on Natural History, his name will descend to posterity with praise and admiration. He had chosen a retirement in the fine county of Devon, singularly beautiful, for the prosecution of his inquiries into the works of Nature; and some very rare MSS. were in preparation for the press at the time of his death. Col. Montagu was of very ancient and honourable descent, being, on the paternal side, from the family of Montagu, of Lackham House, Wiltshire, closely allied to the noble houses of Manchester and Sandwich; and, on the maternal side, from the family of Hedges, of Alderton, county of Gloucester, of whom Sir C. Hedges, Secretary of State to Queen Anne, was a distinguished ornament. Col. Montagu possessed a long correspondence between Her Majesty and her favourite Secretary, which, with the family estates of Lackham and Alderton, descend to his son, George Montagu, Esq.—*Gentleman's Magazine, Vol. LXXXV.*

The vignette on the next page is a representation of Knowle Cottage, as it is there called, which is situated about half a mile from Kingsbridge, and at which Col. Montagu resided many years. For this opportunity of presenting a memorial of an English zoologist, I feel myself greatly indebted to the kindness of the Rev. Robert Holdsworth, of Brixham, who supplied me with a sketch from which the vignette below was prepared.—Yarrell's *British Birds, Vol. I., p.* 453.—[From the ardour and success which characterised Col. Montagu's researches into various departments of Natural History, the students of separate branches frequently imagine that his whole attention was confined to their particular section; but the fact is widely different, as many of our readers are doubtless aware. We should be much obliged to any one who will assist us to a memoir and authentic portrait of the Colonel.—Ed. *Nat.*]

CHAPTER OF MISCELLANIES.

METEOROLOGY.

Murphy's Weather Almanac.—On the night of Jan. 9, on which the weather-prophet promised us the "lowest degree of Winter temperature," the thermometer sank as low as 15° Fahr., and probably the cold was more intense in many places. Mr. Murphy has also been generally correct throughout the month of January.—Editor.

THE PELÉ OF NUANU.

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THE NATURALIST.

VOL. IV., NO. XXX.—MARCH, 1839.

ON THE VARIETIES OF BRITISH FERNS, AND THE DIAGNOSES OF ALLIED SPECIES.

By T. G. R. Rylands, Esq., Corr. M.B.S., &c.

Notwithstanding the almost universal attention which has been directed by botanists to this family, our knowledge of it is yet very imperfect, and much still remains to be done. The diversity of opinion is still considerable, and such as can only be dispelled by actual and attentive investigation. It hence appears incumbent on those who have studied them to publish their observations, and thus not only facilitate the path of the student, but procure for themselves decisive diagnoses, and a more perfect analysis of this most interesting tribe. It is hoped, therefore, that the following remarks, the result of several years' observations, will not be deemed uninteresting or unimportant.

Polypodium vulgare.

P. vulgare, *Brit. Flo.* (Hook.), 3rd Ed., p. 447 ; 4th Ed., p. 382.
" " *Fil. Brit.* (Bolt.), p. 32, tab. 18.
" " *Brit. Ferns and Allies* (Francis), p. 16, pl. 1, figs. 2, 3.
" " With. *Brit. Bot.* (MacGillivray), p. 379.

The common state of this species varies frequently in size and general figure, but such variations have little effect on its diagnoses. In one from Kenilworth Castle the frond is very narrow, measuring $8\frac{1}{2}$ in. by 2, and the lobes are opposite : the common state averages, in proportion, about 7 in. by 3. The frond of one from N. Wales measures $6\frac{3}{8}$ by 4, is oblongo-ovate, and very bright yellow on the back, especially near the rachis. Its lobes are distinctly crenate, and covered with sori, as usual barren.

β (*serratum*), lobes variously, often doubly serrated, the serratures always distinct ;

γ (*cambricum*), lobes large, ovate, deeply cleft, in some cases almost pinnatifid, Bolt., tab. 2, fig. 5 ;

δ (*proliferum*), lobes proliferous, frequently bearing fruit, Bolt., tab. 2, fig. 6;
ε (*acutum*), fronds and lobes pointed, more or less acuminate.
This resembles the Var. β, but the fronds, lobes, and teeth are much sharper.

Polypodium dryopteris.

P. dryopteris, *Brit. Flo.* (Hook.), 3rd Ed., p. 448; 4th Ed., p. 383.
" " *Fil. Brit.* (Bolt.), p. 52, tab. 28.
" " *Brit. Ferns and Allies* (Francis), p. 18, pl. 1, fig. 5.
" " With. *Brit. Bot.* (MacGilliv.), p. 380.

This is so nearly allied to *P. calcareum*, that in a dried state they have frequently been mistaken; when growing they may easily be known by the position and texture of the fronds, but when dried other points must be examined. Mr. Babbington in his "Notes" (*Mag. Zool. and Bot.*, Vol. I., p. 141) says:—"*P. calcareum* may *always* be distinguished from *P. dryopteris* by being minutely mealy in all its parts. Each particle of this mealiness, under a high magnifying power, appears to be a minute, stalked gland. I have not been able to find any trace of this on *P. dryopteris.*"

Sir W. J. Hooker, in speaking of *calcareum*, says:—"It may be distinguished by its more pectinated divisions, and more rigid texture." These, I think, will prove sufficient diagnoses.*

Woodsia Ilvensis.

W. Ilvense, *Brit. Flo.* (Hook.) 3rd Ed., p. 448; 4th Ed., p. 383.
" " *Brit. Ferns and Allies* (Francis), p. 20, pl. 1, fig. 7.
" " With. *Brit. Bot.* (MacGilliv.), p. 380.
Acrosticum Ilvense, *Fil. Brit.* (Bolt.), p. 14, tab. 9.

However distinct this and *W. hyperborea* may appear to a person having both before him, yet when either is seen alone, and more especially that state of the former which is sold in London for the latter, it is not always easy to distinguish it. It will be best done by the following characters:—

In *W. Ilvensis* the frond is scaly; the pinnæ oblong, deeply cut, and crenate.

In *W. hyperborea* the frond is hairy, the pinnæ triangulari-ovate; inciso-pinnatifid.

In my specimens of the latter the fronds glisten with a brilliant lustre, from minute crystals, with which the surfaces are scattered. (Query, crystals of *what?*—are they foreign to the plant?) In our present plant also the covers of the sori

* I may here just mention an accidental error which occurs in the history of the localities of this Fern, in Mr. Francis's useful little work, p. 18, line 13 from bottom; for "Dry places, Lancashire (sparingly), Hill Cliff, Chesh. *and* Warrington," read "Dry places, Lancashire—Sparingly Wood, W. of Hill Cliff, Chesh., *near* Warrington."

are but separated into a few capillary divisions, while in the other they are so numerous as to resemble a bunch of hairs.

Cistopteris dentata.

C. dentata, *Brit. Flo.* (Hook.), 3rd Ed., p. 451; 4th Ed., p. 386.
" " *Brit. Ferns and Allies* (Francis), p. 21, pl. 1, figs. 9, 10.
Polypodium fragile, *Fil. Brit.* (Bolt.), p. 50, tab. 27.
Cystea dentata, *Brit. Bot.*, With. (MacGilliv.), p. 382.

The variety β *angustata*, if it has any right to the title, differs considerably in appearance from the var. α. My specimens strictly resemble those mentioned by Hooker (*Brit. Flo.*), and have the frond broader, and the pinnules rather more divided. But I think further observation is necessary to decide how far it is distinct.

β somewhat approaches *C. fragilis*, from which it is easily known by the broader frond and more obtuse pinnules, which are also less divided. In *fragilis* also the rachis is dark and polished, which is not the case in my specimens of *dentata*.

C. Alpina is well distinguished from either by its small, tripinnate frond, which is also somewhat broader than in *C. fragilis*.

Aspidium lobatum.

A. lobatum, *Brit. Flo.* (Hook.), 3rd Ed., p. 449; 4th Ed., p. 384.
" " *Brit. Ferns and Allies* (Francis), p. 26, pl. 2, fig. 2.
" " With. *Brit. Bot.* (MacGilliv.), p. 381.
Polipodium aculeatum, *Fil. Brit.* (Bolt.), p. 48, tab. 26.

β (*lonchitidoides*). This variety is formed by the union of the pinnules forming a pinnate frond; in this state it can only be mistaken for *A. lonchitis*, in which the fronds are pinnate, the pinnæ falcate, ciliato-serrate, acutely and distinctly auricled on the upper base.

In *lonchitidoides* the union of the pinnules is seldom complete, the lower pinnæ being often either pinnate or pinnatifid, and in the state most differing from the common plant; they are more or less divided, and the lobes serrate; the frond is also larger, and generally occurs about intermediate between *lonchitis* and *lobatum*. Very young fronds of the latter take the characters of *lonchitidoides*.

Sir W. J. Hooker still (4th Edit.) retains his opinion that *A. lobatum*, *aculeatum*, and *angulare* must either constitute one or three species. I am little qualified to give an opinion on this point, my opportunities of observing having been far from as numerous as I could desire. But I have always hitherto readily known *lobatum* by its more rigid texture, and the larger size of the pinnules generally, but more particularly the upper primary one, which, however, is but serrated like

the rest, while in all the states of the others which have come under my notice, they are more or less pinnatifid or pinnate.

As to the varieties of *aculeatum*, viz., *angulare*, and *angulare Var. β*, of Hooker, I have had plants under cultivation which have borne fronds having the characters, as far as I am acquainted with them, of all three; this might have been the effect of cultivation: future investigation must decide.

β (*angulare*) has the pinnules blunt, with the teeth somewhat spinulose (?).

A. angulare β, Hook., has the pinnules divided, forming a subtripinnate frond.

Aspdium thelypteris.

A. thelypteris, *Brit. Flo.* (Hook.), 3rd Ed., p. 450; 4th Ed., p. 385.
" " *Brit. Ferns and Allies* (Francis), p. 29, pl. 2, fig. 6.
" " With. *Brit. Bot.* (MacGilliv.), p. 381.
Polipodium thelypteris, *Fil. Brit.* (Bolt.), p. 40, fig. 22.

This in many points resembles *A. oreopteris;* but when seen growing, it is easily known by its creeping roots, and the smell emitted by *oreopteris* on drawing it through the hand; and when dried it is only the barren state which can be mistaken, the pinnæ of the fertile fronds being deflexed, and curled, with the edges of the segments covering the lines of sori. When barren it may be known by its more ovate frond, smaller size, and lighter colour.

Aspidium filix-mas.

A. filix-mas, *Brit. Flo.* (Hook.), 3rd Ed., p. 450.
" " *Brit. Ferns and Allies* (Francis), p. 31, pl. 2, fig. 8.
" " With. *Brit. Bot.* (MacGilliv.), p. 381.
Polipodium filix-mas, *Fil. Brit.* (Bolt.), p. 44, tab. 24.

Mr. Francis mentions three varieties of this species, none of which I have yet seen, viz.:—

" β (*variegatum*). White, tipped, and edged with green.
γ (*recurvum*). Pinnæ crisped, turned down, frond small, rachis smooth.
δ (*spinosun*). Pinnules serrate, smaller ones blended together, larger auricled."

He also mentions it being found with a cormus some inches above ground, and a curious interesting state found by Mr. Pamplin, in Surrey, with the upper pinnæ much branched.

In 1837 I fathered a monstrosity in this neighbourhood, which, if the frond had been developed as usual, would have measured about twelve inches. For the lower five inches the rachis was almost bare, and on the next four the pinnæ bore one, two, three, or four pinnules, somewhat in the style of an irregular frond of *Pteris ternifolia*, along which the pinnæ were faded, but appeared to have been as in the common plant; the small lower pinnæ were fertile, and distinctly

serrated. *Aspidium cristatum* has been confounded with a small state of this plant, but may easily be distinguished by its narrower frond, and short "obtusely" ovate-oblong pinnæ, the segments of which are acutely, sometimes doubly serrate.

Aspidium rigidum.

A. rigidum, *Brit. Flo.* (Hook.), 3rd Ed., p. 450; 4th Ed., p. 385.
" " *Brit. Ferns and Allies* (Francis), p. 33, pl. 2, fig. 10.

Distinct as this may appear to those who have seen the Yorkshire plants, its characters are far from being well known by those who have not.

Mr. Francis is not exactly correct, I think, in stating that its "*alternate* pinnæ would be amply sufficient to distinguish" it; since I have a specimen in which the lowest pinnæ are almost exactly opposite, nearer so than in *A. spinulosum*, after which they become, by degrees, alternate. I have also one in which the lowest pinnæ are above an inch apart, the second pair half an inch, the third and succeeding pairs to within three inches from the top opposite; after which they become alternate, the right-hand pinnæ being the lowest at the bottom of the frond, and the left-hand one at the top; in others they *are* alternate, others are different still, but these are sufficient to show that the relative position of the pinnæ is not an "amply sufficient" diagnosis. It may, however, always be easily distinguished by its narrow oblong pinnæ, the large indusium, which is seldom present on the lower ones, and the distinctly bi-dentated pinnules.

A. cristatum has been mistaken for this and the allied species *spinulosum*, from both of which it is sufficiently distinct in its simply pinnate frond and broad pinnæ.

Aspidium spinulosum.

A. spinulosum, *Brit. Flo.* (Hook.), 3rd Ed., p. 451; 4th Ed., p. 386.
" " *Brit. Ferns and Allies* (Francis), p. 34, pl. 2, fig. 11.
" " With. *Brit. Bot.* (MacGilliv.), p. 381.

There is still no little doubt as to what is to be considered as the *true A. spinulosum;* I have specimens from various places, named by several botanists of some eminence; but I must confess I can see in none of them diagnoses sufficient to distinguish them from the very variable *A. dilatatum.* The plant from Woolston Moss, only, appears to me to be distinct; and is easily recognised by its erect, long, and narrow frond, paler colour, somewhat rigid texture, and dark rachis; and I am happy in being able to state that this is also the opinion of my esteemed friend W. Wilson, Esq., who, in addition, mentioned to me the small, entire edged involucres, and the absence of the auricle at the anterior base of the pinnules, as characteristics.

Aspidium dilatatum.

A. spinulosum, β, *Brit. Flo.* (Hook.), 3rd Ed., p. 451 ; 4th Ed., 386.
A. dilatatum, *Brit. Bot.*, With. (MacGilliv.), p. 381.
" " *Brit. Ferns and Allies* (Francis), p. 35, pl. 2, figs. 12, 13.
Polipodium cristatum, *Fil. Brit.* (Bolt.), p. 42, tab. 23.

Under any circumstances it would be no easy task to describe and distinguish the permanent varieties of this extremely variable plant; I myself feel it peculiarly difficult, having not more than a dozen specimens for reference, and having only examined it in one district; I will, however, attempt it as far as my observations will allow, hoping that those whose opportunities are superior, or whose sphere of observation is more extensive, will freely and kindly correct me should I have erred in this or any other point.

α. *dilatatum-verum.* Frond triangular, ovate, sub-tripinnate; height from 12 to 20 inches; light green, flat; pinnules oblongo-ovate, lobes sometimes convex. (Nearly *A. spinulosum* of Hooker, &c.)

β. (*dumetorum?*). Frond ovato-triangular; height from 4 to 14 inches, more or less drooping; pinnules oblong, rather light, and bright green; fertile in all sizes.

γ. (*dilatatum*, Auct.). Fronds triangulari-ovate; height one to three feet, tri-pinnate, dark green, drooping; a most beautiful and graceful variety.

I have never yet seen the variety δ (*reflexum*, Bree), but should think it has an equal claim to rank as such with the others, respecting which I am yet in much doubt.

Bewsey House, Warrington, T. G. R. R.
Jan. 12, 1839.

(To be continued.)

ON THE VALUE OF PLATES AND ILLUSTRATIONS AS SUBSERVIENT TO THE STUDY OF NATURAL HISTORY.

By Edwin Lees, F.L.S., &c.

" The image of it gives me content already."
Shakspere's *Measure for Measure.*

In a former number of *The Naturalist* I think I recollect an observation of Mr. Rylands (for whose entomological acquirements, as instanced in various articles, I entertain great respect) deprecatory of the employment of plates as subservient auxiliaries in the study of Natural History. At all events his remarks were

decidedly to the effect that description was far superior to delineation—and that the former was the sole legitimate source for the student to trust to.

Since that time, in some remarks "On the Popularity of Natural History," I have stated my opinion that good plates are powerful adjuncts in the study of every department of Natural History; I have therefore recommended their employment to the student as aids to his unassisted efforts; and I consider them in many cases indispensable, because language is often inadequate to convey to the mind those minor details which involve the subject in doubt, though doubt is dispelled in a moment by the examination of a good plate. In promulgating this dictum, I really thought that if it did by possibility incite a few more persons to purchase the works of the confessedly ill-remunerated authors of illustrations in the various departments of Natural History, some little good might be effected. Mr. Rylands, however, is not content to let the matter remain in quiescence, but, resolute in his former expressed opinion, now goes further, and at page 8 of the present volume of *The Naturalist*, takes up a position "On the *Abuse* of Prints in Works of Natural History."—The opinion of a skilful observer and learned and logical reasoner, as Mr. Rylands assuredly is, deserves respectful attention, and is not flippantly to be disposed of, particularly as he speaks in accordance with the opinions of "many naturalists," as I have heretofore admitted. As I am no dogmatizer, I should have left the readers of *The Naturalist* to form their own conclusions from what had already passed, had not Mr. Rylands pointed his artillery with such precision upon me, that I feel obliged to answer the fire in some degree to avoid total annihilation! I am happy to find, however, that Mr. Rylands allows the luxury of plates for the "class who require *enticing*," which I will venture to say is about nine-tenths of those who give any attention to Natural History as a pursuit at all; so that in fact I am only vulnerably assailed in one position, and the inquiry is narrowed into the question whether plates are beneficial to those "whose love of Nature will not allow contentment with a slight and superficial acquaintance with her works, and whose fixed purpose it is to attain, if possible, a proficiency in their study."*

I might here ask, *in limine*, who is to tell the result of "enticing" a person with the sight of a *book* of plates, full of the delightful imagery of Nature—whether quadrupeds, birds, Testacea, insects, or plants? How, in fact, is a love for knowledge called forth at all but by the sight of *these living objects* under the blue sky and in the open air? Why every one must admit, that the contemplation of Nature itself is far superior to all that Buffon or any other the most eloquent naturalist could write upon the subject; and if so, then accurate

* Vide Mr. Rylands's Paper in *The Naturalist* for October last.

representations of these living objects come next in attraction to the objects themselves, and description is the last and most remote enjoyment of all. If this be so, as in fact it is, I ask again, who is to tell the result of "enticing" a previously uninformed person unfamiliar with the country, with a book of engravings illustrative of birds, insects, or plants? The very circumstance may call forth the development of those "perceptive faculties" which before were unawakened. I am sure I can recall the sight of coloured prints of birds, seen when a schoolboy by mere stealth and accident, with unmixed delight; and general experience, I doubt not, will at least give a verdict *here* in my favour.

But probably Mr. Rylands will admit all this—he will allow the *uninitiated* plates and drawings;—he will permit them as an amusement and an enticement —but the moment they become *really useful*—I might add *indispensable*—he strangely puts his ban upon their employment, and withdraws them altogether! I really am unable to perceive the justice or propriety of this; and to use for a moment the simile Mr. R. has employed, however delightful it may be occasionally to trudge over hill and dale in the wild fervour of delight, insensible to weariness, yet when *time presses*, the roads are muddy, and the skies lower, who that has a "last shilling" in his pocket, but will wisely get a lift by a passing coach if he can? This may be getting over the ground rather empirically, but it certainly gives a rest to the understanding!

But very probably Mr. Rylands and myself are contemplating two descriptions of characters. Mr. R. seems to have in view the mere collector, who from a love of rare or curious forms, does all in his power to amass a collection, and *never tries* by his own industry to obtain a systematic knowledge in any way. Hence he consults no scientific works, is content to know objects by their vernacular names merely, however preposterous, unless he lays hold of a kind friend whose memory he taxes in a most inordinate manner, and a complete bandit in science, robs per force all that unfortunately fall in his way, or may choose to minister to his pseudo-pretensions, by exchanging their knowledge for his duplicates. Such an individual may be a good collector, and perhaps an unwearied one—but deficient in the "development of the perceptive faculties," or wanting time, industry, or application, will not trouble himself with the toil (for such he considers it) of studying the principles of classification. Now though I cannot consider such an individual a scientific naturalist, and though I do not say that a good illustrated work will make him so, it certainly might tend to lessen the trouble often given to "kind friends" to work out the problem of nomenclature in his behalf. In my former observations, however, as well as in my present ones, I am contemplating the *unassisted student,* who has only to trust to *his own* industry and application by observation, and the use of such works as he may be able to procure.—One who may have no "kind friends," or at any rate no

scientific ones—no extensive museums to refer to—no naturalist at hand to solve his doubts—or if he had, would prefer arriving at the truth by his own "healthfully-exercised" exertions. As Mr. Rylands concedes plates to all other parties, why not to a student of this character?—or to any student? I am not here supposing that "description" is not applied to; but who that has tried it but must admit the paucity—nay the utter inadequacy of language to describe with nicety and perfect fidelity all the facts that are intended to be conveyed to the mind, or that ought so to be. Nay, the very expressions often used have a variable meaning, or no determinate one at all, so that no definite image arises before the mind, and the student is but too happy if one or two out of the many tests offered, prove available. He must trust to guess for the rest:—or something really tangible and obvious to the student, is altogether unnoticed by the systematic describer. Thus the question becomes one of accuracy and tact in tracing the prominent unvarying features in an object, and the felicity of this, "written with the pen of a master," I at once subscribe to. But where shall we find this master-pen visible in portable hand-books such as a young student might successfully employ? The fact is, adjuncts in some shape to mere systematic description in the formulæ of science must be employed to facilitate that knowledge which is not at once to be attained without it; and if a good plate effects this, after language has been exhausted in vain, we ought to be thankful for the appearance of such an auxiliary, rather than scorn the employment of its useful aid, because it may be thought there is "empiricism" in it. Unfortunately, as I have before observed, there is no talismanic power in scientific language—on the other hand it is often so obscure that *commentary* at least is absolutely necessary to decypher it. Having Lindley's *Synopsis of the British Flora*, 2nd Edit., lying on my table, I may just refer to what is there observed relative to the genus *Rubus*, which will show, I think, the difficulty language *alone* presents even to the most learned professor adequately to effect the object intended. "For the long characters formerly employed," observes the professor, "I have substituted very short ones, it having been found that the former are more perplexing by their vagueness than the latter by their brevity; and *I have trusted to foot-remarks* for helping the student to understand them." These "foot-remarks" correspond in some degree with engravings, as pointing out circumstances in a familiar way, which specific scientific description would not legitimately admit, and consequently, as aiding "empiricism," I fear Mr. Rylands would object to. I must candidly confess, however, that even with the aid of these "foot-remarks," so uncertain is the application of language to varying particulars, that I could never satisfactorily understand the British *Rubi* as distinguished by Dr. Lindley in his *Synopsis*, till by the favour of a botanical friend I received a series of specimens, named, I was given to understand, by the

learned professor himself. In fact it is well known to botanists that description alone has led to numerous mistakes, which the inspection of any good plate would in almost every instance have rendered impossible; and they are so well aware of this, that wherever it is practicable, they invariably refer the plant under description to some known figure of authority, to avoid all possible ambiguity.

I do not mean to assert, in turning towards Entomology, that it is so difficult to discover the specific as well as generic names of familiar or specious insects that plates must be of necessity employed; but in cases of doubt, uncertainty, or inadequate descriptions, I contend that as an accurate representation of the object of inquiry prevents all mistake, they are a valuable adjunct to the student for the aid of which he ought to be exceedingly thankful; nor can I perceive any valid reason why he should not employ this aid. Mr. Rylands objects to my former simile of ascending the mountain, and I demur to his of the railroad, which seems to me here inapplicable. Let me try to be more successful at another. Suppose Mr. R. and myself to be examining objects in the same room as twilight is rapidly drawing on. I declare that I must have a candle, as the light has become insufficient for my purpose, while Mr. R. contends that there is light enough for *him*. The candle or lamp aids my researches by its illumination, while he accomplishes his purpose without it. Now in this light I regard plates illustrating objects of Natural History;—they certainly cast a friendly ray upon the subject, which, else immured in Cimmerian gloom, offers but an extremely dubious glimmer in many cases for the "perceptive faculties" to repose upon. Those who resolve to do without them, are, however, of course free to act as they please.

It is curious enough that Mr. Rylands, in a "foot-remark," appears to sink his ensign to half-mast high after all. He confesses that "I ought perhaps to except a great portion, especially of the *smaller Lepidoptera*, which I am afraid no descriptions, however good, would enable the student to distinguish. Plates are perhaps here necessary, as words can hardly describe accurately [the very point of contention] colours so variously and intricately blended." This almost at once reduces the matter into a question of relative magnitude, for if in the "smaller" *Lepidoptera* plates are "here necessary," so of course they must be for all the "smaller" insects of whatever order; for surely "intricately-blended" colours* are not *entirely* confined to the smaller *Lepidoptera;* and where such blended colours appear, it is admitted that descriptive language becomes inadequate to "enable the student to distinguish." Acting upon the minimum size thus at any rate allowed by Mr. Rylands, all the "smaller" and Cryptogamous *plants*,

* I need not insist on *forms* of minute structure, Mr. Rylands distinctly and justly admitting the utility of the dissections of organs, as so elaborately worked out by Mr. Westwood in his recent work on the genera of British insects.

as well as those whose organs of fructification are minute or obscure, I presume he will allow us engravings of, and of course the minuter *Testacea*, zoophytes, and *Infusoria*;—so that the meshes of Mr. R.'s net will act the converse principle of the Spider's web—stop only the large Flies, and tub the Whales! Really, then, little remains to dispute about, for if Mr. R. admits the utility of plates in the smaller and more obscure tribes, where the principal difficulties occur, it must be a matter of trifling consequence, in examining a species with obvious characteristics, whether a student looks at a plate of it or not, if he examines, as no doubt he would, his specimens also. On the other hand, I consider it advantageous for a naturalist to be a competent judge of the merits or defects of plates, which he can never be if he makes it a point to neglect them—because while an accurate engraving is a treasure, an incorrect one is worse than nothing. As to any "*abuse* of prints in works of Natural History," I can conceive none unless in the case of a very bad engraving—or where, as in an old black-letter folio "*Hortus Sanitatis*" now before me, imaginative animals, as the Basilisk, Griffin, and Salamander, are represented from fabulous relations, and a long-tailed, long-tongued, formidable-clawed "Leviathan" is figured from the mention of such a being in the Book of Job, combined with the fancy of the designer.

I can readily conceive and understand that Mr. Rylands is only anxious that the young student shall obtain the habit of examining for himself "peculiarities of structure," and not as a *matter of course* resort in all cases forthwith to plates. So far I admit the propriety of investigation to every inquirer; but when we consider the enormous waste of time imposed if every species is invariably to be determined only by the light of frequently very inadequate or ill-understood description, I cannot but think that the "calm philosophic pleasure" thus derived, however ennobling, is very dearly purchased. When probabilities seem nearly balanced, when descriptions are so faulty or ambiguous that discrimination itself is bewildered; who that in such a case could obtain the aid of a good plate, but must hail it with heart-felt delight! This is no fancied picture; it is in the experience of every practical naturalist;—and when I look into botanical works, and perceive such men as the "accurate Purton,"* so denominated by Sir J. E. Smith, stating frankly that certain species were mistaken by him until he saw them figured—when I perceive, even in the pages of *The Naturalist*, Mr. Dale frequently complaining of certain insects being formerly mistaken by him or misnamed by him, I see clearly that without pictorial illustration Natural History could make no important advances. Had Mr. R. objected only to coloured daubs, introduced merely for effect, and preferred the plain though rigid graver as more

* Author of *Midland Flora*, 4 Vols.

effective and true, I might have agreed with him in reprobating *this* "abuse,"—but I cannot concede that in abandoning the subsidiary aid of prints, any commensurate advantage can arise, or that the persons so employed in getting up illustrative books are engaged in a work of supererogation. I never heard of any person objecting to the use of a museum—its advantages are allowed on all hands—and yet, is not that in fact a collection of pictures? more perfect, indeed, than prints can possibly be, because they are the preserved objects of study themselves—and because they may be there seen in varied stages of growth. Yet they are motionless, testifying only to form and structure, but silent as to habit, food, or sound. And yet with these imperfections, a student will gain more practical knowledge from a week's study in a museum, than from a year devoted to the toilsome process of gaining an "appreciation of differences" from description, unelucidated, be it remembered, by the solitary gleam of a single plate. Whatever differences there may be in the constitution of minds, and in the relative development of the perceptive faculties, there is always a pleasure in proceeding from the known to the unknown;—hence the healthful stimulus afforded by the sight of museums—the removal thereby of doubts and difficulties, and the hopes of future successful enterprise thus engendered. The sight of plates acts in a similar manner—familiar things are reviewed—long clouds of doubts that have often tortured the mind are cleared away—hope revives, and the spirits are enlightened and purified for fresh effort. I confess I have no objection to receive help—no tenacious selfishness in withholding it; and as the economy of time is of immense importance—and as the majority of the lovers of Nature can only in general spare a *portion* of their time to their favourite pursuit, I do think that it is of importance in cases of doubt to take the benefit offered by an engraving's aid, instead of losing half-a-day or more in a laborious examination, which at last the inadequacy of language leaves to a despairing and empirical guess, frequently wrong after the employment of every effort of analyzation.

As Mr. Rylands objects to the application of my unfortunate similes, I am afraid I shall be unsuccessful in pleasing him even now, yet I am tempted to try another, hoping that it will be as "little likely to do harm," as he imagines in the case of plates of the smaller *Lepidoptera*. What would be thought of a man who, travelling in an unknown region, rejected the proffered aid of an experienced guide, from the "philosophic pleasure" he conceived he should derive from finding his way alone, having a description of the country in his pocket. Surely if in such a case he became bewildered, benighted, and lost, he could only have himself to blame, and none could pity the privations thus entailed by his own obstinacy. —"You had better take a guide," said a man to me once when seeking a particular spot, "for if you get bewildered in the woods it will be difficult to get out without great loss of time;" but, Ass-like, I trusted to "description" only, and

thus travelled double the distance, and took double the time to obtain my object that was really necessary—while I had very nearly abandoned the pursuit in despair. So when at Capel Curig two years ago, I was told that persons frequently started for the summit of Snowdon, refusing a guide, as beneath their dignity as exploring travellers; but when returning at the close of day, wet, weary, and exhausted, the result of their futile efforts was too often found to be "*non est inventus.*" I must leave the application of this to the naturalists whose employment of perpetually changing terminology renders the language they employ inexplicable without glossaries and explanations interminable as the difficulties they heap together. I am not quite certain whether Mr. Rylands and myself would agree as to what the "pen of a master" could accomplish at description. It is evident, as I have shown from Dr. Lindley, that there is the Scylla and Charybdis of lengthy vagueness or perplexing brevity. Changing, therefore, a well-known proverb, I conclude by saying to all concerned, as my injunction—Get knowledge—easily if you can—if not, get knowledge!—and surely to refuse aid because it makes toil "easy," is as unreasonable as it would be to wade through a ditch to avoid the undignified and empirical assistance offered by a plank! There really seems to me enough of *unavoidable* toil and difficulty in scientific study, without acting upon the invariable rule of "making a toil of a pleasure," to use an old but well-known proverb.

Forthampton, Gloucestershire,
Jan. 24, 1839.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part XXI.

By Neville Wood, Esq.

(Continued from p. 260.)

The present part opens with a handsome figure, natural size, of

White's Thrush,—*Turdus Whitei*,—Merle de-White, *Fr.*—This bird has been figured in the *History of the Rarer British Birds*, by Thomas Campbell Eyton, Esq., of Eyton Castle, and named, in the same work, after a gentleman who in all probability never heard of such a species! Two specimens have been killed on the banks of the Elbe, near Hamburgh, and a third was shot in Hampshire, in January, 1828, by Lord Malmesbury. From the superior length of the wings, as compared with our British Thrushes, it is probable that it is strictly migratory. It is undoubtedly not a true Thrush, though placed provisionally in *Turdus*. The superior size, the smaller bill, and the difference of shape and

markings of this bird as compared with *T. hortensis* (*musicus*, auct.), *T. pilaris*, &c., are characters amply sufficient specifically to distinguish *Mr. White's Thrush*. It is very common in Japan, and "is in all probability over a great portion of Southern Siberia."

Black Grous, *Tetrao tetrix*,—Tétras Birkhan, *Fr.*—Gallo di-monte, *It.*—Gabelschwanziges Waldhuhn, *G.*—A pair of these beautiful birds are splendidly figured, rather less than the natural size. It inhabits Europe, especially the North, is common in Scotland, and in many parts of England. The male is of a fine glossy black, and has a singular horn-shaped tail. The female is rich brown, rayed and barred with black. Both sexes have a red patch over the eye. As Mr. Gould extracts the rest of his account of this noble bird from the admirable *Illustrations of British Ornithology*, by Prideaux John Selby, Esq., of Twizell House, we shall refer our readers to that work for further particulars.

Migratory Ouzel, *Merula migratoria*,—Merle erratique, *Fr.*—The figure is passing beautiful, and represents an adult, natural dimensions. Inhabits the most Northerly regions of the new world, only occasionally migrating to Europe, having been seen in the neighbourhood of Vienna. "Those that build their nests in the fifty-fourth parallel of latitude," observes Dr. Richardson, "begin to hatch in the end of May; but eleven degrees further to the North that event is deferred till the 11th of June. The snow even then partially covers the ground; but there is, in those high latitudes, abundance of the berries of *Vaccinium uliginosum*, *Vitis idœa*, *Arbutus Alpina*, *Empetrum nigrum*, &c., which, after having been frozen up all the Winter, are exposed, on the first melting of the snow, full of juice and in high flavour. Shortly afterwards, when the callow young require food, the parents obtain abundance of grubs." Its habits, song, nidification, &c., much resemble those of our familiar Garden Ouzel. "So much," says Audubon, "do certain notes of the Robin (the American name for *M. migratoria*) resemble those of the European Blackbird, that frequently while in England the cry of the latter, as it flew hurriedly off from a hedge-row, reminded me of that of the former when similarly surprised, and while in America the Robin of that country has in the same manner recalled to my recollection the Blackbird of England." The female is somewhat smaller than the male, and paler in her tints.

Mountain Dunnock, *Accentor montanellus*,—Accenteur montagnard, *Fr.*—A pretty figure is given, of the size of Nature. Inhabits the Eastern portions of the middle of Europe, the same latitudes in Asia, &c. Mr. Gould has only seen one specimen, although he has visited nearly all the continental collections. This is a typical species of *Accentor*, closely allied to our *A. modularis*, or Hedge Dunnock, from which it is distinguished by the tawny colour of the under parts.

Egyptian Chenalopex, *Chenalopex Egyptica*,—Oie d'Eypte, *Fr.* (Egyptian

Goose).—An adult male is figured, one-third less than the living size, by Mr. E. Lear. It is not a handsome bird, and therefore not calculated to display the artist's powers. Inhabits the whole of Africa, occasionally migrating to Europe. "This is the species which would appear to have been held in great veneration by the ancient Egyptians, as we frequently find a figure of it among the stupendous works of that people." The female is smaller than the other sex. It is often kept in confinement, in which state it will breed. It makes a half barking, half quacking note.

Pallid Thrush, *Turdus pallidus*,—Merle blafard, *Fr.*—The figures are in two different states of plumage, and are finely executed. Common in Japan, but has only thrice occurred in Europe; is spread over the whole of Siberia. Its habits are unknown. As our author is not aware of the cause of the different states of plumage he describes in this bird, we shall not here detail them.

Asiatic Nuthatch, *Sitta Asiatica*, Temm.—The figure is of the natural size. "It is rather smaller than the common species (*S. Europæa*), and is much lighter in the general tone of its colouring." Mr. Gould knows nothing further of this species than that he has received one specimen from M. Temminck, and which was from Russia.

Rock Ptarmigan, *Lagopus rupestris*, Leach.—The representation, living dimensions, is in many respects beautiful, but we think the attitude is not quite natural. Some naturalists believe that this and the other specimens killed in Scotland are merely the female of the Common Ptarmigan (*L. mutus*) in the orange plumage of Summer. "Should this prove to be the case," observes Mr. Gould, "our figure will not be destitute of interest, as it will exhibit the female Ptarmigan in a state of plumage not usually seen; but, until this matter is finally cleared up, we have thought it best to figure the bird under the specific title of *rupestris*." Mr. Gould's drawing and that of T. C. Eyton, Esq., are both taken from the same specimen.

Our author believes that none of the American Grous are identical with those of Europe.

Northern Puffin, *Mormon glacialis*,—Macareux glacial, *Fr.*—An adult is well figured, of the living size. Strictly confined to the ice-bound regions of the Arctic Circle, over the whole of which it is probably distributed. It occurs, however, rarely in temperate climes. The sexes agree with each other in plumage. It is easily distinguished from the species which commonly breeds on our coasts by its larger and stronger bill, &c.

Common Partridge, *Perdix cinerea*—Perdrix grise, *Fr.*—Graues Feldhuhn, *G.*—The figures, of a male and female, "natural size," are excellent in every respect, save that they convey an idea of birds too bulky in appearance. Inhabits

Europe, Egypt, and Barbary. To detail the habits and appearance of this well-known delicacy, would, we conceive, be a work of supererogation.

Silky Reedling, *Salicaria sericea*,—Becfin soyeux, *Fr.*—An adult male is sweetly represented. Frequents low bushes "bordering the ditches between the vineyards near the Brenta; and has a loud and tolerably fine song." No further particulars are known. This bird appears to us—as far as can be judged from the inspection of a figure—to be intermediate between the Reedlings (*Salicaria*) and the Locustells (*Locustella*).

Common Pheasant, *Phasianus Colchicus*,—Faisan vulgaire, *Fr.*—Fagiano commune, *It.*—Gemeine Fasan, *G.*—Splendid as is this plate—representing a male and female one-third less than the natural size—it will not be difficult to believe that it does not come up to Nature. Long as the Pheasant has been naturalised in Europe, it was originally imported from Colchis and from the borders of the river Phasis, in Asia-Minor, whence its name in various European languages. The Pheasant is too well-known and too generally admired to require any further description.

Whimbrel Curlew, *Numenius phæopus*,—Courlis courlieu, *Fr.*—Chiurlo minore, *Fr.*—Regen Brachvogel, *G.*—An adult is figured of the natural size. It is widely dispersed over the old world, being common in India and the North of Africa. In the temperate latitudes of Europe it is migratory, spending its Summer within the Arctic Circle, where it breeds in the extensive flats and morasses of those desolate regions. It is common on the flat parts of our shores in Winter, and especially at the mouths of large rivers, feeding on molluscs, &c. "It is generally seen in small flocks, which on being approached take wing and fly off with great vigour and rapidity. Dr. Fleming states that it has been known to breed in Scotland, constructing its nest on the exposed Heath and moor lands. Its eggs, four in number, are of an olive-brown colour, blotched and spotted with darker reddish brown." Mr. Gould has, however, never seen the eggs. The sexes are similar. This bird is smaller than *N. arquata*, which in many respects it closely resembles.

Desmarest's Cormorant, *Cormoranus Desmarestii*, N. Wood,—Cormorant de-Desmarest, *Fr.*—Mr. Lear has figured an adult of the living dimensions. Inhabits the East of Europe, or rather the shores of the Black Sea and its tributary streams. This bird closely resembles the Shag Cormorant, but has longer wings, and a much longer and more attenuated bill. Habits unknown.

Black-bellied Dipper, *Cinclus melanogaster*,—Cincle à-ventre-noir, *Fr.*—The figure, of a male, is exquisite. Mr. Gould agrees with Brehm in questioning the distinctness of this bird, but, supposing the plate to be faithful, we think there can be no doubt but it is a true species. It is rather less than the Common

Dipper of Britain, has a darker and more uniform colour, and the boundary of the white chest is more distinctly marked, especially near the belly. We trust this will eventually prove to be an addition to the interesting genus of Dippers.

Sabine's Xeme, *Xema Sabini*,—Mouette de-Sabine, *Fr.*—An adult male is delicately figured, in Summer attire, and of the natural dimensions. The only two specimens which have been known to occur in Britain were shot in Ireland, as noticed in the *Magazine of Zoology and Botany*, No. v. It was discovered by Capt. Edward Sabine, and is a pretty general Summer visitor to the Arctic seas, laying two eggs on the bare ground, and hatching at the close of July. The eggs are an inch and a half long, and olive-coloured, with blotches of a darker hue. Agrees with the Terns in its forked tail, its choice of a breeding place, and its bold habits. Young birds have the head mottled with grey and white, instead of being of a uniform blackish-grey, as in the adult Summe plumage.

Willow Locustell, *Locustella luscinoides*,—Becfin des saules, *Fr.*—One figure is supplied. It is confined to the South of Europe. According to Dr. Savi it arrives in Tuscany about the middle of April, frequenting Willows, Reeds, &c., in marshy places, and being easily approached. Mr. Gould observe that it *runs* on the ground. We should be glad to know if this is actually the case, contrary to the habits of our Brake Locustell, which *hops*. Feeds on insects and their larvæ, but as it is only a recent addition to the European Fauna, little or nothing is known of its habits.

Noddy Tern, *Sterna stolida*,—Mouette brun, *Fr.*—Mr. Gould has figured an adult of the natural size. The general appearance of this bird, and especially its low head, appear amply to justify the name which it has received. The only known European specimen of this species was shot in Ireland in 1830. Inhabits America, laying three reddish eggs, marked with dull red and purple, on the shelves of rocks. It also builds in bushes or low trees, constructing a large nest of twigs and Grass, "while hovering over or near which the old birds utter a low querulous murmur." Unlike the rest of the family it takes its prey skimming along the surface of the water, and the old birds seek their food —small fishes, &c.—at a greater distance from land than the other Terns are observed to do.

Bifasciated Thalamet, *Certhilauda bifasciata*,—Alouette bifasciée, *Fr.*—An adult male, natural size, of a bird apparently as little like either a Lark or a Creeper as can well be imagined, is figured. To the systematist, however, the relationship to the sub-family *Alaudinæ* will be obvious on examination. Common on the banks of the Nile and in Abyssinia, and is a rare straggler in the South of Europe. Habits unknown. The sexes do not differ. The long curved

bill, short hind claws, and the general shape and colour of this bird, are the points which separate it from the Larks.

Common Gull, *Larus canus*,—Mouette à-pieds-bleus, *Fr.*—Gabbiano mezza-mosca, *It.*—An adult and a young bird are represented, rather less than the natural size. Passes the Summer in the Arctic regions of Europe, Asia, and America, migrating Southwards in Winter, and occurring in most of the temperate portions of Europe. It is common on the British coasts, being resident with us. The nest is formed of Sea-weed and Grasses. The eggs, two or three in number, are yellowish-white, blotched irregularly with brown and grey. In Winter it sometimes puts far out to sea, and often, like the Rook, Wagtail, &c., follows the plough in search of Worms and Slugs. It is two or three years arriving at maturity, "the change being from mottled greyish-brown to a delicate Lead-colour on the upper surface, and whitish beneath." In Spring the brown streaks on the head and neck disappear, and those parts become of a perfectly pure white."

Our next article will contain an analysis of the last part of Mr. Gould's magnificent work.

Campsall Hall, Jan. 29, 1839.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 246.)

Bidens.—From *bis*, twice, and *dens*, a tooth; alluding to the awns of the seeds.

Bidens tripartita, Trifid Double-tooth, Water Hemp, or Bur Marygold.—The seeds have two or three prickly angles, and as many erect bristles, likewise prickly with reflexed hooks, by which the seeds stick like burs to any rough surface, and are sometimes said to injure fish, by getting into their gills. The herb gives a yellow colour to woollen or linen.

Blechnum.—From Βλεχνον, a Greek name for a Fern.

Blysmus.—Βλυσμος, source or spring, near which the species usually grow.

Borago.—Minshew and Blanchard say, it was formerly written *Corago*, from *cor*, the heart, and *ago* to bring, because it was supposed to comfort the heart and spirits; thence corrupted into *Borago*, or, as the French spell it, *Borrago*.

Borago officinalis, Common Borage.—This plant is now seldom used inwardly, but as an ingredient in cool tankards for Summer drinking, though the young and tender leaves are agreeable in salads, or as a pot-herb. It was formerly esteemed a principal vegetable cordial, as testifies the Latin proverb,

"*Ego Borago gaudia semper ago*;"*

or, as GERARD has it, "Those of our time do vse the flowers in sallads to exhilarate and make the minde glad. There be also many things made of them, vsed every where for the comfort of the heart, for the driving away of sorrowe, and increasing the ioie of the minde." By the experiments of M. MARGGRAFF (*Mem. de Berlin*), it appears that the juice affords a true nitre.

Borkhausia.—Named in honour of MORITZ BORKHAUSEN, a German botanist.

Botrychium.—From βοτρυς, a bunch of grapes; from the appearance of the branched clusters of capsules.

Botrychium lunaria, Common Moonwort.—Its name *lunaria*, or Moonwort, is taken from the shape of the leaves, and if gathered by the light of the moon, was said to "doo woonders." GERARD mentions a remarkable instance of the properties attributed to it by the alchemists and witches, "that it will loose locks and make them fall from the feet of Horses that do grase where it doth grow;" "too drowsie a dream" for even GERARD to believe, but he adds, that it is "singular for wounds."

Brachypodium.—From βραχυς, short, and πους, a foot; from the spikelets being almost sessile.

Brachypodium sylvaticum, Slender False Brome-grass.—Cattle refuse this Grass. It is very subject to be affected with the "rust" when flowering.

Brachypodium pinnatum, Heath False Brome-grass.—It cannot as yet be considered in any other light than as a noxious weed; for though the weight of produce is large, it is neither early, nutritive, nor relished by cattle. Mr. O. ROBERTS has observed it on Spoonbed Hill, near Painswick, so stoloniferous as to be prejudicially exclusive of more valuable herbage.

Brassica.—VARRO says, *quasi præsica*, from *præseco*, to cut off, because it is cut from the stalk for use; or from πρασια, a bed in a garden, where they are cultivated. HOOKER, according to THÉIS, derives it from the Celtic *Bresic*, a Cabbage. WITHERING from βρασσω, to boil; being commonly so prepared as an esculent vegetable.

Brassica napus, Rape or Cole-seed.—The roots of the cultivated variety may be eaten like the Turnip, but they have a stronger taste, and its seeds, which are called Cole-seed, afford a large quantity of expressed oil, called Rape oil, which is

* Hence the old adage, "I Borage, bring always courage."

particularly serviceable to the wool-combers, for which purpose it is extensively cultivated in the Isle of Thanet. The residuum (oil cake) is used for fattening oxen, and also for manure.

Brassica rapa, Turnip, or Knolles.—If the roots be kept in sand, or in a cellar, during the Winter, they send out white shoots and yellowish leaves, which, being rather sweet and not unpleasant to the palate, are used as salad, when other esculent plants are not to be had. But the greatest use of Turnips is in feeding oxen, and more especially Sheep, in Winter. The juice, well fermented, affords by distillation an ardent spirit, and may be made into an inferior sort of cider. The rind is acrimonious.

Brassica oleracea, Sea Colewort, or Sea Cabbage.—Early in the Spring the Sea Cabbage is preferred to the cultivated kinds; but when gathered on the sea coasts, it must be boiled in two waters, to take away the saltness. When blanched (Sea Kale), it is an elegant and acceptable Winter vegetable. The roots may be eaten like those of the preceeding species, but they are not so tender. The different varieties of cultivated Garden Cabbage originate from this.

Brassica monensis, Dwarf Sea Cabbage, or Isle-of-Man Cabbage.—In places where cattle graze, the plant is always eaten down to the roots; and probably in poor sandy soil, especially near the sea, it might be cultivated to advantage. The different species of *Brassica* afford nourishment to *Papilio Brassica*, *rapæ*, and *napi*; *Phalæna fuliginosa*; *Aphis Brassicæ*; and *Chrysomela Hyoscyami*.

Briza—From βριζω, to nod; alluding to the pendulous or nutant position of the blossoms.

Briza media, Cow-quakes, Ladies'-hair, or Common Quaking-grass.—It is justly observed by Mr. Knapp that we have no indigenous plant more universally known than *Briza media*; the Quaking-grass, says this elegant writer, is in the hands of every child; and the peculiar simplicity of its habits, and the elegant manner in which the spiculæ are disposed, "trembling at zephyr's whisp'ring breath," render it not unfrequently an associated ornament in the bouquet. If a seed be carefully dissected under the microscope, the young plant will be found with its roots and leaves perfectly formed. From experiments made by the late Mr. G. Sinclair, this Grass appears better fitted for a poor sandy soil than for a loamy or moist clayey one, and deserves some attention for such poor tenacious soils as cannot be rendered fit for the production of superior Grasses.

OBSERVATIONS ON THE HABITAT AND NATURAL HISTORY OF THE MISTLETOE.*

Read at the Cheltenham Literary and Philosophical Institution, Dec. 21, 1838.

By Edwin Lees, F.L.S., F.B.SS.L.&E.

At this season of the year perhaps a more interesting or exciting object can scarcely come under the sphere of our observation, than the long-familiar Mistletoe. It is one of those plants of gereral interest that are alike noticed by the clown and the philosopher; and attracts the attention of the meditative man of science in the open fields of observation, as well as the unscientific votaries of fun and frolic, that in these bronzen utilitarian days still dot the scene here and there as a counterpoise to their graver and more studious brethren. I shall, therefore, in the brief sketch I am about to give of the plant, admit a sportive vein that few other subjects would allow in philosophical discussion, remembering that mirth and joy have ever nestled among the white berries of our festive plant; for, as Walter Scott says—

> "Forth to the woods did merry men go
> To gather in the Mistletoe."

The decorative effect of our domestic hearths garlanded with Holly, Ivy, and Mistletoe, during the festival of Christmas, cannot fail to be exciting, derived as the custom is from time-honoured antiquity, and recalling cherished, though perhaps forgotten, feelings of holidays and happiness. The original idea appears to have been to decorate houses and temples at the Winter season with *every kind of evergreen*, and Mistletoe among the rest; that the sylvan spirits, supposed to be devoted to the woods, should be tempted to reside for a period in the abodes of men, and to protect them from evil. Why Mistletoe became so particularly regarded, appears to have arisen from a superstition extending back as far as Druidical times, when the young bride wore a branch of Mistletoe suspended from her neck, which was supposed (as it was considered a remedy against barrenness) to ensure an offspring numerous as the spotless berries produced by the plant itself. So that formerly it seems to have been the exact converse of the dreaded *Willow;* for while those that had *lost* their loves were conducted to that hopeless barren tree, or at least recommended to sojourn beneath its shade, those damsels

* This article originally appeared in two numbers of the *Cheltenham Looker-On.* We trust no apology will be considered due, either to the Editor of that Journal or to our readers, for publishing it in its present form, which we have much pleasure in doing, despite the press of matter in our possession. It appears to us that so able and so pleasing an essay ought not to be confined to a local circulation, and we have acted accordingly.—Ed.

who were not in such an unfortunate predicament, were either merrily or stratagetically escorted to the Mistletoe, whose berries, being pure white, of course could not fail to intimate the bridal wreath, and white satin ribband. Archdeacon NARES, who has written very learnedly on this subject, and seems to have been a great friend to the mystic rites of the Mistletoe, deprecates any unreasonable resistance on the part of ladies taken or caught under the sacred plant; as he states that a non-performance of the usual ceremonial brings in its train all the evils of old-maidenism. It appears that *berries* of the plant alone constituted its privilege; one was to be plucked at every salute, and various authorities insist that when the *last* berry is plucked from the bush, its potential and venerated character ceases.

"One single berry yet remains
Untouch'd by rude and vulgar swains;
By all unpluck'd, it seems to say
Whate'er has passed is Christmas play;
But now, ere comes the vernal breeze,
The *last* chance fortune offers—seize!"

The most remarkable circumstance, however, in the history of the Mistletoe is its growth. It is always found growing upon and imbibing its support from the juices of some tree; it has never been met with attached to earth, nor can any treatment induce it to grow there. It is, therefore, termed by analogy a parasite; but a vegetable parasite is somewhat different from a human one. Dr. JOHNSON defines a parasite to be "one that frequents rich men's tables, and earns his welcome by flattery;" and SHAKSPERE denominates parasites as

"Most smiling smooth *detested* parasites:
Courteous destroyers, *affable* Wolves, *meek* Bears."

But our vegetable parasites, when they have once taken up their post, have no need to be "*affable* Wolves," as they cannot be got rid of by any process; but, rather tyrants than parasites, prey upon the tree they have taken possession of, and retain their hold till death. *Epiphytes* are very common among vegetables, the greater number of the *Lichen* tribe being so, as well as many of the *Fungi;* but it is rather uncommon to find a true parasite, the epiphytes only living upon other plants as a nidus, and not deriving subsistence from them as is the case with the Mistletoe.

Some have considered the Ivy to be a parasite, but in fact it takes a tree as a fulcrum or prop only, and merely exemplifies the conduct of those good-natured friends who will kill you with their officiousness sooner than deprive themselves of the pleasure of your company. *Orobancheæ*, *Lathræa squamaria*, and *Listera nidus-avis*, have all been considered parasites, but in fact they only shelter themselves among the roots of trees as a secure asylum, their very nature demanding

shade and obscurity. But the nodular masses of matter replete with juices at the base of *Orobanche major*, the succulent scales from which *Lathræa* springs, and the nidiform bulbs of *Listera*, all denote that these plants, however auspicious their nature, require no foreign provision for their sustentation. It is very different with the Mistletoe, and apparently also with a little local phænogamous plant, called Dodder (*Cuscuta*), which are, perhaps, the only true parasites among flowering plants known in Britain. *Boleti*, *Polypori*, and various other *Fungi*, are doubtless really parasitical, not only living upon, but often destroying the miserable victims exposed to their invasion.

The Mistletoe (*Viscum album*, Linn.) is a dicecious plant, of which the females seem to be by far the most numerous, producing, from their tetrandrous corolla and inferior ovary, a white globular viscid berry of one cell, containing one seed. The embryo is Dicotyledonous, but the coriaceous leaves with parallel veins, have certainly a very peculiar aspect, and both sides have the same uniform yellowish-green colour which distinguishes the smooth, jointed, round stem. When the embryo germinates, it generally produces two or more radicles, whose shape has been compared to that of a French horn, which, curiously enough, do not progress downwards, as is common to the generality of plants, but, contrary to the law of gravitation, often push directly upwards, as is the case when one of the glutinous seeds is deposited on the under side of a branch; and in other cases the direction of the radicle is always perpendicular to the axis of the branch. The provision of Nature for the increase and continuation of her offspring, is shown as much in the Mistletoe as in any other plant. Although its nature is dicecious, and consequently a plant standing alone might not produce any fruit, it is found that a single seed often nourishes two embryos, a brother and sister; and the gluten which envelops the seed furnishes nutriment to the young plants till they have penetrated with their sucker-like radicles, which are devoid of fibrils, into the sap-wood of the tree. As the Mistletoe derives no nutriment from the earth, and has therefore no necessity to fall to the ground, its dissemination is wisely entrusted to birds, who are tempted to feed on its white berries when other supplies fail, and in cleansing their bills upon the rind of various trees frequented by them, are sure to leave behind them a few of the clammy seeds to perpetuate the continuance of the parasite. It is not improbable also, that the seeds pass through the bodies of birds uninjured, as stated by old writers, and even benefited by the forward tendency thus given them to earlier germination.

Birds of the Thrush family chiefly delight in the Mistletoe berries, especially the Fieldfares and Redwings; and as these generally fly in flocks, keeping in one line of direction, it is not unusual to see a corresponding line of Mistletoe-bushes ranging across the country for a long distance. I have followed such a line till its continuity was broken by a river, when I have almost invariably found that

its course was again continued from the nearest tree that presented itself on the opposite side of the water. I remember once observing a long line of hedge overtopped by straggling Hawthorns and scrubby Maples, every one of both of which was hung with Mistletoe; but, curiously enough, an Oak in the centre of the hedge was passed over, though the parasite was luxuriant on a Hawthorn close *under* the umbrage of the Oak.* The large rotund bushy mass that the Mistletoe forms is often very striking, especially if it be pendent; and it is remarkable that there is no disposition in the plant to destroy the tree where it grows, as, except at the point from which it develops itself, the radicles penetrate no further than the sap-wood. The Mistletoe, therefore, seems only to act the part of a pseudo-bud upon the tree, no doubt extracting from it nourishment that would have developed a large branch, but not doing material mischief, except existing in excess, or so far surrounding any branch as to cut off the supplies of nutriment from proceeding farther, save into its own reservoirs. It seems always full of moisture, and being therefore extremely brittle, it is corded tightly together by lateral ligatures, that, extending along each dichotomization beneath the epidermis, preserve it from the effects of common accidents; while the base of each branch is firmly socketed into a swelling nob that surmounts the inferior one—thus a regular dichotomous series of branches is formed, all firmly articulated in an ossiform manner into each other, and yet each branch may be considered an independent plant, with leaves, flowers, and fruit.

It seems curious, that though the Mistletoe flowers earlier in the year than the Apple-trees on which it flourishes, yet it does not ripen its small white berries till December, long after most others, and thus is called by Virgil "*frigore viscum*,"—the *Wintry* Mistletoe. This may not improbably arise from its being unable to steal sufficient nutriment from its nurse till the latter has got rid of her own legitimate offspring, and lost her foliage too. But at any rate this fact is opposed to the commonly-received notion of the descent of the sap in trees before Winter, and its dormant state in that season; for if it were so, how could the parasitical Mistletoe, which derives its subsistence entirely from the imbibition of the juices of the tree on which it is found, flourish as it does in Winter, if in reality there were no supplies of sap for it to have access to? for it very soon dies when separated from the foster-parent on which it feeds. It certainly contrives to establish a fund of its own in the hard yet juicy tubercles and its exsertion in the stem; but still its root, which is analogous to a sucker, and devoid of obvious radical fibrils, plunged in the sap-wood of the tree, seems always

* Perhaps where the Mistletoe is scarce or not at all met with in Apple-orchards, as stated by Dr. Davies, of Presteign, of those of Radnorshire, the localities may not be frequented by the Winter migratory birds belonging to the Thrush family.

employed in pumping up a supply of provisions for its many-handed branches, equally in Winter as in Summer.

It is familiar to almost every educated person that the Mistletoe was honoured by the Druids of Gaul and Britain as an heaven-descended plant, which they denominated "*pren-awyr*," the celestial, or tree of the firmament; and also *oll-yach*, *all-heal*, and distributed at certain times with remarkable solemnities as a precious gift. "When the end of the year approached, the Druids marched with great solemnity to gather the Mistletoe, in order to present it to God, inviting all the world to assist at the ceremony in these words:—*The new year is at hand, gather the Mistletoe!* The sacrifices being ready, the priest ascended the Oak, and with a golden hook cut the Mistletoe, which was received in a white garment spread for that purpose. Two white bulls that had never been yoked were then brought forth and offered to the Deity, with prayers that he would prosper those to whom he had given so precious a boon."

It was, however, only the Mistletoe of the Oak that received this idolatrous veneration; and hence, as in the present day the Mistletoe appears most commonly upon the Apple-tree, and hardly ever upon the Oak, a suspicion has arisen that there must be some mistake in the matter. A gentleman, who has published several ingenious theories, once proposed the hypothesis to me that in the lapse of years a misnomer had arisen, and that in fact *our* Apple-tree was the *Oak of the Druids!* I believe he was at last fairly laughed out of the position he had proposed to take up; but if he had not been, the matter is put to rest by Davies, who, in the *Celtic Researches*, says that the Apple-tree was considered by the Druids the *next* sacred tree to the Oak, and that orchards of it were planted by them in the vicinity of their groves of Oak. This, by-the-bye, was a sly trick on their parts, as they thus, no doubt, made a nursery for the Mistletoes among the Apple-trees, and thus offered a very fair chance of getting it easily transplanted to their sacred Oaks. Professor Burnet says, that the curious basket of garlands with which "Jack-in-the-Green" is occasionally even now invested on May-Day, is a relic of a similar garb assumed by the Druidical assistants, when about to hunt for the Mistletoe, which when they had found they danced round the Oak to the tune "*Hey derry down, down down derry*," which literally signified—*In a circle move we round the Oak.* Whether the Druids really capered about to the tune of "*Derry down*," as stated by the learned professor, I shall leave to Cambro-britons, and bards interested in the matter, to decide at their leisure. There are certainly Oak woods in Monmouthshire still called "*the Derry*;" and Ovid, at any rate, affirms that the Druids used to *sing* to the Mistletoe.

Fosbrooke thus details the ceremony, perhaps, however, amplifying from Pliny, who merely states that a priest, clothed in a white robe, ascended the tree

and cut off the Mistletoe with a golden sickle. "The bards walked first singing canticles and hymns; afterwards came a herald, the caduceus in his hand, followed by three Druids, who walked in front, carrying the things necessary for the sacrifice: afterwards appeared the prince of the Druids, accompanied by all the people. He mounted upon the Oak, and cut the Mistletoe with a golden sickle. The other Druids received it with respect, and upon the first day of the year distributed it to the people as a holy thing."* The Druids, it is affirmed, had an extraordinary veneration for the number three, and as the berries of the Mistletoe may be often found clustered in threes, this may probably have enhanced their esteem for the "celestial plant."

Having been myself a frequent Mistletoe-hunter, though certainly not robed in the mystic habiliments of "Jack-in-the-Green," or as a white-robed Arch-Druid, I shall now just state the various trees that I have actually seen studded with the hallowed mirth-inspiring Mistletoe.

On the Apple—extremely abundant; and why it is so I think arises from the disposition in that tree to form knots, a disease produced from an excess of sap, or an inertness in it to which the Mistletoe offers a relief somewhat analogous to cupping—the redundant juices being carried off as nutriment to the parasite.

..... Pear—rare.

..... Lime—rather common, and often plentiful.

..... Hawthorn—frequent, and in extending lines.

..... Maple—not unfrequent.

..... Mountain Ash—very uncommon.

..... *Robinia pseud-Acacia*—local, though in shrubberies in Worcestershire I have several times seen it there.

..... Willow—occasionally.

..... Ash—sometimes very profusely.

..... Medlar—met with once only.

..... Aspen—very rarely.

..... Black Poplar—so excessively abundant in almost all recent plantations in Worcestershire, as literally to bend some of the trees towards the ground; yet on old Poplars I have never seen a single plant.

A few other trees have been mentioned on which I have not seen the Mistletoe, and I therefore pass on to notice its occurrence on the *Oak*, which is now undoubtedly a very great rarity; and I consider this to arise partly from the Romans having destroyed all the Druidical Mistletoe, for it is most remarkable that though so many old Oaks are recorded as existing in this country, perhaps upwards of 1,000

* Fosbrooke's *Ency. of Antiquities*, Vol. II., p. 745.

years old, not one has Mistletoe upon them. Even the Rev. W. Davies, in his *Flora of Anglesea*, once the head quarters of Druidism, is unable to mention a single locality where the Mistletoe now grows there.* A few years ago I had a long ramble in Surrey after the Mistletoe of the Oak. Being in London, an enthusiastic friend came to me one day and said, exultingly, that he had just heard that the Mistletoe had been seen on an Oak at Bookham Common, and that in the woods of Surrey it was not uncommon. The next morning off we started over bush, brake, and scaur; and deluged with rain, after many efforts, drew only a blank day: and we learned afterwards, to our great mortification, that my friend's informant had meant Ivy, when he *said Mistletoe!* At last, however, on June the 7th, 1837, I was fortunate enough to behold a young Oak, about 70 or 80 years old, with four fine bushes of Mistletoe growing upon it, in Earl Somers's Park, at Eastnor, near Ledbury, on the side of an old British road, at the Western base of the Malvern hills, called the "Ridgway;" but on the strictest inquiry and examination, among natural Oak woods there of more than 300 acres in extent, this was the only Oak with Mistletoe upon it, and is the only one I have ever seen.

The Mistletoe is rather a local plant, though often occurring, where it does grow, in immense quantities, as in the orchards of Herefordshire, Worcestershire, and Gloucestershire. It is rare in Wales, being quite unknown in some districts, becomes still rarer in the North, and is only found in one spot in Scotland. On the Continent it is as uncommon upon the Oak as with us; and De Candolle, from having never seen it there, was induced to think that *Loranthus Europæus* was the real Druidical plant, which is an untenable opinion—*Loranthus*, though common on the Continent, having never been seen wild in Britain in the present day.

No author that I have met with gives any satisfactory solution as to how the term *Mistletoe* has arisen, though German and Danish have been brought forward for the purpose.† But I think I can give the etymology without going so far. Now there is an obsolete old English word called *mistion*, which is employed even in the writings of Boyle; and this is defined in Dr. Johnson's original folio edit. of his Dictionary as "*the state of being mingled.*" Now this is truly the state of our plant, which is *intermingled* with the foliage of various trees, and mixes up their juices with its own; and is now indeed in rural places still simply

* The Island of Anglesea is taken to be one of their [the Druids] chiefest seats in Britain, because it was a solitary island full of wood, and not inhabited of any but themselves; and then the Isle of *Mone*, which is called Anglesea, was called *yr Inys Dowyll*, that is the Dark Island. And after that the *Drudion* were suppressed, the huge groves which they favoured and kept a-foot, were rooted up, and that ground tilled.—Toland, *Hist. Druids*, 222.

† See Withering's *Bott. Arr. in loc.*, and Loudon's elaborate *Arboretum Britannicum.*

called the *Mistle*. If to this we add the old English *tod* or *toe*, signifying *bush*, we have at once the derivation—meaning the *mingled* or compounded bush.

Anciently, as we have seen, the Mistletoe was considered a remedy for ALL *diseases!* The older medical writers, however, regarded it as ministering chiefly to *fertility* and parturition, thus, in fact, continuing in part the old superstition; and it is also said to have been worn as an amulet against poisons. RAY mentions it as a specific in epilepsy,* and as useful in apoplexy and giddiness; and Sir JOHN COLBATCH published a "Dissertation concerning the Mistletoe, a most wonderful specifick remedy for the cure of convulsive distempers." This brochure of Sir JOHN's seems to have been almost the last serious effort of consequence made in behalf of the medical virtues of our mystic plant, at least in this country; and as it is admitted by all parties that the Mistletoe employed *must* be *Viscus quercus*, while it seems reasonable to suppose that if the plant had any powers, the place of its growth would be of little consequence, incredulity has taken possession of the minds of the great majority of physicians on the subject; and Sir JAMES SMITH rather sarcastically intimates that "a plant of *Viscum* gathered from the Oak is preferred by those who *rely on virtues* which perhaps *never existed in any Mistletoe whatever.*"† At all events, as stated by Dr. WOODVILLE in the *Medical Botany*, whatever may yet be argued in its favour, "the colleges of London and Edinburgh have, perhaps not without reason, expunged it from their catalogues of materia medica."

The Mistletoe seems still, however, to maintain a precarious place in rustic empirical practice. I asked a farmer, who lives in the neighbourhood of my residence, a short time since, what he knew on the subject, and he said that the Mistletoe of the Oak, when it could be met with, was a capital thing for a *sick cow!*—but especially after calving—shades of the Druids! that "all-heal," once gathered by a white-robed Arch-Druid with a golden hook, and received upon a stainless cloth, as the mystic gift of heaven—now shorn of all its glories, and divested of all its sanatory powers as respects the human race, now only figures in the traditions of rural practitioners as an aperient for an ailing cow! It is probable that an elastic gum might be prepared from the Mistletoe somewhat similar to India-rubber, for its sap is viscid as well as the berries, which were formerly used to make birdlime, whence the latin appellation *Viscum*.

* RAII *Syn.*, 464.

† *English Flora*, Vol. IV., p. 237.

CURSORY REMARKS ON TROPICAL SEAS.

(Communicated by Mr. Edwin Lankester, M.R.C.S.)

The want of animation in the Northern seas, which is very striking on dull days, when their scanty inhabitants, from the want of cheerful light, retire to great depths, is changed under the Equator for the bustle of a most varied creation. Whilst sailing in these regions all on board the vessel is still, like the peaceful quiet of a sabbath. The sailor, intent on his work, sits quietly at the prow of the vessel, for the constancy of the weather renders all noisy manœuvring quite unnecessary, and all the business is carried on with the silent punctuality of clockwork. The day passes away in quiet uniformity, unless the sight of a distant sail, the appearance of fish, or a strange Jelly-fish, afford a welcome interruption.

At last evening draws on, announced by a diminished force of the wind. It would be a vain attempt to presume to describe in words the splendid colouring of a sunset in these regions. This is the only time of day in which those light, transparent, curiously-shaped clouds are formed on the horizon called dew-clouds. Their transitory existence favours the development of that extraordinary play of colours which is produced by the dispersion of the more oblique rays of the sun.

Even after having often seen the rising and setting of the sun from the summit of the European Alps, and the extreme ridges of the Andes, I unhesitatingly give the preference to the same scene in the Equatorial seas. Whilst one side of the vessel is still illuminated by the last fading rays of the evening sun, and the opposite side darkened by the shade of the sails, the sea in this direction already becomes brilliant. One spot after another begins to be illuminated; indistinct stripes of light commence glimmering from greater depths, till at last with the approach of night a new creation seems to be called into existence. These illuminated beings move in various directions, sometimes appearing like sparks, sometimes like a radiating ball of fire, at others darting through the dark surface of the water like a rapid flash of lightning. A great number of these beings are undoubtedly true night-animals, which conceal themselves during the day-light in the dark depths of the ocean.—Pœppig's *Reise in Chili, Peru, and auf dem Amazonstrome.*

ON THE PEARL FISHERY OF LOWER CALIFORNIA.*

By Alexander Forbes, Esq.

For one branch of commerce, the Pearl Fishery, California has been famed from its first discovery. The glory and the riches derived from this source are, however, almost traditional; at least, the actual amount of the trade is insignificant. Nevertheless it is by no means certain that the sources of a beneficial commerce in this respect do not yet exist, provided proper means were taken for pursuing it with effect.

Long before the discovery of America by the Europeans, the natives of many of the maritime parts of it were acquainted with the art of diving for pearls, as these were found by the first discoverers to be held in great estimation as ornaments.† Hernando de Soto found them in great quantity in Florida, where the tombs of the native princes were ornamented with them; and among the presents made to Cortez by Montezuma before his entry into Mexico, necklaces of precious stones and of pearls are mentioned by Gomara: these Cortez sent to the Emperor Charles V. The Incas of Peru, also, we are told by Garcillasso, set a great value on pearls, but the laws of Manco-capac prohibited the natives from exercising the trade of diver, as being dangerous to the individual and not very profitable to the state.‡ After the discovery of America the traffic in pearls became considerable. They were found chiefly near the island of Cubagua, in the mouth of the Rio de la Hacha, and in the gulf of Panama, near the Islas de las Perlas (whose inhabitants still pursue the fishery), on the shore to the North of Acapulco, and on the East Coast of California, in the gulf. We are told by Acosta that in 1587, 697lbs. of pearls were inported into Seville from America, upwards of 11lbs. of which were of the greatest beauty, and destined for the king, Philip II. The pearl fisheries of Cabagua and Rio de la Hacha seem to have been of short duration; and their exhaustion turned the traders more eagerly towards that of California, which had already supplied the crown of Spain with its richest pearls, found in the expeditions of Yturbi and

* This article is printed from some proof-sheets of a work entitled *A History of Upper and Lower California*, and which were kindly communicated to us by John Forbes, M.D., F.R.S., the author's brother.—Ed.

† It was not indeed necessary that they should be divers in order to possess pearls, as we find, from the voyage of Father Consag (*Venegas*, Vol. II., p. 310), that in certain places (as at Cape San Miguel in lat. 29 deg.) the sea throws up on the shore great quantities of them.

‡ Humboldt's *New Spain*.

Pinadero. In those times the trade in pearls was certainly very considerable; and this continued to be carried on, without any restriction, up to the period of the settling of the country by the Jesuits. It is stated by Torquemada that previously to the arrival of the strangers, the Californians hardly put any value on the pearls, as they were in the habit of throwing the Oyster into the fire, in order to obtain the flesh for food; the pearls being destroyed by the same process. "But the avidity of others," he adds, "has communicated its flame even to this simple people; who are now eager to get, and careful to keep, what they have seen highly valued by foreigners." The conduct of the Jesuits in regard to this fishery has already been stated: it was strictly forbidden on account of the oppression and cruelty to the natives to which it led.

The rude and savage adventurers of those days little regarded the welfare or even the lives of the Indians when put in competition with their own selfish interests; and it was customary to kidnap and employ by force, as divers in the pearl fishery, all they could lay their hands on, on the coasts and islands of the gulf. Many of the natives, no doubt, voluntarily lent themselves to this employment, under certain terms of remuneration; but this was rather the habit of the few regular traders than of the many casual adventurers who sought the peninsula in search of its boasted treasures. A characteristic illustration of this fact is mentioned by Father Consag, in his voyage for surveying the coast of California in 1746, and which we believe to be no less just as indicative of the character of the Fathers than it is of the practices of the pearl-fishers. On reaching a part of the coast near the top of the gulf, he says,—"The people on seeing the canoes took us for *divers*, and fled up the country; the outrages and brutality of these men having rendered them equally dreaded and detested by all the natives of California; but on being made acquainted by some of their countrymen, who were with me, that *A Father* was come in the canoes, they immediately returned." It is, indeed, true, that after the establishment of the Jesuits, the pearl fishery, which had been previously greatly interrupted by the opposition of the natives originating in these cruelties, began to be prosecuted with greater vigour and success than ever, now that the divers were left in a considerable degree unmolested; but the divers and traders did not belong to California, but came from the opposite shores of the gulf, whose inhabitants to this day are the principal fishers. The Jesuits had the influence to obtain authority from the government, not only for excluding all vessels from fishing in the gulf except such as had the Viceroy's license, but also that the military commandant (who, be it remembered, was under the authority of the Fathers) should have the power to examine and verify these licences, and to prevent the approach of all vessels not provided with them. It was expressly forbidden to every one, whether soldiers or seamen, belonging to the missions, to have any thing to do with the fishery; a

regulation which excited extreme discontent at the time, but which the Fathers had the power to get fully carried into effect. Their reason for debarring their people from this trade, was their conviction, founded on experience, that, if permitted, it would not only seduce them from their proper duties in the missions, but would inevitably lead to the oppression of their children the Indians—as they termed them.

At the period of these regulations, at the very commencement of the seventeenth century, the revenue to the crown was not inconsiderable, as the king's share (a fifth) amounted to no less than 12,000 dollars per annum for every bark employed. After the expulsion of the Jesuits the trade seems to have declined greatly, partly no doubt from the exhaustion of the Oyster-beds, but partly also from the mismanagement of the whole system adopted in its prosecution.

When the pearl fishery was prosecuted to its greatest extent, from six to eight hundred Indian divers called "*Busos*" were employed; it was carried on by small vessels of from fifteen to thirty tons burden, which were fitted out by private adventurers, and carried each from thirty to fifty divers. The owners accompanied the vessels, and carried with them provisions for the people, and a little money to advance them in the course of the season. The place of fitting out was at the port of Guaymas on the opposite coast, and when ready they had to procure a license from the Commandant-general of the province of Sonora, in which that port is situated; being so provided, they made sail for the coast of California, and cast anchor on such banks as contained pearl Oysters, which banks are called "*Placeres*." The whole fishery, however, was not anciently carried on by vessels of the size above mentioned; and, perhaps, decked vessels were not at all then employed. The armadores went in launches, and the divers used canoes, bringing the Oysters on shore for the purpose of opening them. This is evident from the large heaps of shells yet remaining in many spots. Numerous canoes are still attached to the larger vessels employed at the present time.

The manner of carrying on the fishery was as follows:—The vessel being anchored, and every thing ready, the divers plunged down in all directions, and dug up with a sharp-pointed stick as many Oysters as possible while they could remain under water; they then came up, took breath, and at the same time deposited the Oysters in bags hung over the vessel's sides. Having done this, they again plunged under water, repeating the same operation till the bags were full, or the usual time for working expired; they then all came on deck with the bags, and placed themselves in a circle round the owner, or, as he was called, the "*armador*," who took the contents of the whole bags, and made a division as follows:—two Oysters for the armador, two for the busos, and one for the king; proceeding in this way till the whole of the Oysters were disposed of. When this operation was concluded, they all began to open the Oysters, beginning with

those which fell to the lot of the armador, but without moving from the circle which they had formed round him; and he had then to watch with the utmost vigilance, for they had a dexterous knack of swallowing the most valuable pearls along with the live Oyster, which they threw into their mouths by a kind of slight of hand, which it was almost impossible to detect. The king's fifth was then opened under the same precautions, and the pearls deposited in the presence of all. Lastly, the divers opened their own Oysters, and the pearls were equally divided amongst them, and generally sold on the instant to the armador, to whom they were always indebted for their outfit, and for previous advances. They however never failed to reserve some, which they sold to the dealers on shore, who always accompanied the busos, and who often made more money than the armadores. These dealers carried with them spirituous liquors, chocolate, sugar, cigars, and other cheap articles of which the Indians are passionately fond; and for which they often exchanged pearls of great value.

The season for carrying on the fishery is from the beginning of July till the beginning of October. The exact value of pearls produced while this business was prosperous cannot be now easily ascertained. It has been variously estimated. From documents supplied to Mr. Hardy in 1825, and published in his *Travels in Mexico*, it is stated, on the authority of Don Jose Maria Retes, that the number of vessels employed annually on the fishery of Loreto was from six to eight, and the quantity of pearls from four to five pounds weight, worth from 8,000 to 10,000 dollars. Captain John Hall, an experienced navigator and trader in these seas, gives us some valuable information on this subject about the same date. A letter of his is published in Mr. Hardy's travels; but we have obtained much further information from him on this and other matters touching California. He gives a somewhat different version of the mode of proceeding in the distribution of the Oysters in the year 1825. He says,—"every time the diver comes up, the largest Oysters which he may bring with him are placed on one side for the Virgin. All the rest are then thrown into a large pile, and in the evening they are divided thus:—eight shells are put on one side for the owners, eight on the other for the divers, and two in a third heap for the government." It would thus appear that the present ruling powers are contented with one-half the share of their predecessors. It is, however, somewhat curious, in these times, that the Virgin should retain full privileges, if not an augmentation of them. Mr. Hardy says that about sixteen or eighteen small vessels are annually employed in the fishery, and obtain, when the weather has been favourable and the divers fortunate, about 500 dollars' worth of pearls each,—sometimes as much as 1,000 dollars. He adds, however, that the expense of the fitting out and other contingencies, reduce the net profits to the proprietors very con-

siderably.* The following statement, kindly furnished me by a friend who resides on the spot, will shew the extent and value of this fishery in the year 1831.

This year two vessels sailed on the Pearl Fishery from the Port of Guaymas, and other two from the River Yaqui in its vicinity, as also two boats; the whole carried two hundred Busos; the largest vessel had seventy; the next fifty; the third thirty; the fourth also thirty; and the boats ten each. One vessel brought forty ounces of pearls, great and small, which were valued at 6,500 dollars; another twenty-one ounces, valued at 3,000 dollars; another fifteen ounces, valued at 1,800 dollars; and the fourth twelve ounces, valued at 2,000 dollars; making the value, exclusive of the two boats, amount to 13,300 dollars, or about two thousand six hundred and sixty pounds sterling.

It has always been the popular opinion among the Spaniards, that there were immensely rich banks of Pearl Oysters on the shores of an island near the head of the Gulf called Tiburon; but that its inhabitants, who use poisoned arrows, were of such a savage disposition, that no one could approach it without being sacrificed: this originated in or at least was confirmed by the circumstance of some people being killed near it, and in consequence the king of Spain, whose laws seemed always to be made on the supposition that none of his subjects had the power to risk his own life, or the common sense to judge when it was in danger, decreed, that no one should hereafter approach that island for any purpose, or on any pretext whatever. This interdict has been to the present time strictly obeyed, and although the Mexican Republicans have thrown off the Spanish dominion, yet the dominion of early prejudice is not so easily got rid of, and consequently the Island of Tiburon is still considered by the Mexican Spaniards as rich and perilous as heretofore; although recent visitors, and among others Mr. Hardy, have proved the risk and the riches to be equally apocryphal.

The most remarkable incident in the recent history of the Pearl Fishery of California is the fact of an Association having been formed in London in the year 1824 or 1825 for the express purpose of prosecuting it, under a new and improved system. The new company was termed the "Pearl and Coral Fishery Association," and great expectations were entertained from the activity of the Director, Lieut. Hardy, R.N., and the use of a diving-bell with which he was furnished. The employment of the diving-bell certainly at first sight seems to hold out a great prospect of success; and we learn from Humboldt that long before the formation of this Association the same idea was entertained by the Mexicans themselves; and a project of this kind was started in 1803 by an

* *Travels in Mexico*, p. 238.

ecclesiastic residing in the city of Mexico. He conceived that as the *busos* (divers) lose much time and also injure their health in their repeated descents and ascents, there would be immense benefit derived from taking advantage of the facilities afforded by the diving-bell for exploring the depths of the ocean. Furnished with a mask and a flexible tube, the diver, he conceived, would be enabled to explore not merely the space immediately below the bell, but all around it as far as the length of the tube would permit. This tube was connected with the body of the bell, which not only acted as a reservoir for the supply of air, but also as a place of refuge or resort when the diver was exhausted. Humboldt says that he saw a number of experiments made with this apparatus in a small lake or pond near the castle of Chopoltepec; and remarks that it was no doubt the first time a diving-bell was constructed at a height of upwards of 7,000 feet above the level of the sea.

It would appear that subsequently the priest, the maker of this diving-bell (which was made of wood), proceeded to California, and was reported to have realized, by means of it, a large fortune in a short period. We have, however, no authentic account of the expedition. The diving-bell of the London Association was, we believe, not a whit more advantageous to the progress of pearl-fishing or to the shareholders in London, than was that of the good Padre, even if it had never left its native pond at Chopoltepec. Some very ineffectual attempts seem to have been made, but not at all of a kind to decide the impracticability of such a plan of fishing: and we believe we may safely say that this problem remains still to be solved.

[We shall probably be happy to review the work from which the above is extracted, when published, and if we are favoured with a copy.—Ed.]

CORRESPONDENCE.

Which is the best Catalogue of British Insects?

To the Editor of the Naturalist.

Dear Sir,—Having been a subscriber to *The Naturalist* since its first appearance, I have long ago perceived with satisfaction, the readiness and pleasure you have at all times evinced in giving to your inquiring friends all the valuable information you are possessed of. Agreeing with the remarks of a correspondent regarding apologies (Vol. IV., p. 195), I shall not trespass more upon your time with offering one, or making any further observations, simply than by stating,

that my desire to be a partaker of your kindness has been the cause of my sending you these lines. I wished to ask you, on behalf of myself and some friends, who are desirous of arranging systematically our entomological cabinets, what catalogue you would recommend as being best adapted for that purpose? We possess *A Catalogue of the Orders, Families, and principal Genera of British Insects* (Whittaker & Co., London), which was published on the 1st of Dec., ult.; but find it very deficient as regards many of the known species, and which we are desirous of possessing. Among the Reviews in your Journal I find you make some observations upon Mr. Curtis's *Guide to an Arrangement of British Insects* (Vol. II., p. 336). There I perceive the author's 3rd consideration for offering the *Guide* to British entomologists is that "It will form labels for cabinets;" but it does not state whether the printing is adapted to that purpose. Awaiting your answer,

I remain, Sir,

Yours, etc. etc.,

Sheffield, Jan. 24, 1839. Alpha.

[Some of our inquiring readers preface their epistles with an apology for the *trouble* they inflict upon us by their queries. We can only say, that the more we are troubled in this manner the better we shall be pleased. *The Naturalist* is a medium for seeking as well as imparting knowledge; and we should indeed be ill qualified for our station were we not to afford all the assistance in our power to every worshipper in the Temple of Nature.—With respect to the present query, we have no hesitation in recommending the second edition of Mr. Curtis's *Guide* (London: Pigot & Co., 1838) as well adapted for the purpose required. By a very neat contrivance, the names may be cut out for labels although they are printed on both sides of each leaf, thus effecting a saving of half the quantity of paper which would otherwise have been necessary. The price is 10s. 6d., or "8s. 6d. to subscribers."—Ed.]

Notes on Insects injurious to Vegetation.

To the Editor of the Naturalist.

My dear Sir,—At the last meeting of the British Association the Rev. F. W. Hope read an interesting paper on the destruction of various insects during the Summer of 1838, and requested further information. On looking over my memoranda, I find the following notices of these pests in our neighbourhood.

Aug. 2.—Nearly all the fields of Beans are infested with a little black Aphis, which appears to have caused considerable injury to the plants. They attack the top of the plant, and although they do not appear to eat the fruit or flower, yet they are effectually blighted.

Aug. 7.—Some of the infected Beans were brought into a room where some French and broad Beans were growing in a little pot of water. A day or two after two or three of the Aphides were found upon them, the old plants were removed, and in the course of eight or ten days the Beans in the room were covered with the insects, amounting to several hundreds.

Sept.—In one field of Beans the most infected plants were removed as early as possible. This did not prevent the whole from suffering more or less. At the present time there is no vestige of the insect but in the stunted growth of many of the plants, whilst others have stood up with the greatest luxuriance, and are looking as fresh as in early Summer. On the whole this crop does not appear to have suffered much. The Aphis does not appear to attack the fruit, and probably made its appearance too late to affect the crop seriously.

Many other plants have suffered. In the garden the Windsor Beans have been attacked by the black Aphis, and next to them the Spinach has suffered most from the same insect. The French-beans, Peas, and Scarlet-runners have none of them been attacked.

Amongst wild plants I have seen *Chenopodium album* covered with the black Aphis.

Heracleum sphondylium and *Angelica sylvestris* have both been infested with a small green Aphis.

The Wild Plum (*Prunus domestica*) was in one instance only found infested with a large bright green Aphis.

The Willows were pretty generally covered with a small green Aphis.

The Apple-trees were all blighted here at the beginning of the Spring, but from what cause I cannot say, as I did not pay them much attention; but I failed to discover any insect upon them. A gardener with whom I conversed on this subject attributed it to the frost that took place late in the season.

My notes are meagre; but, such as they are, they may assist in adding to the facts that shall enable some one to throw light on the interesting and important subject of the attacks of epiphytic insects.

I remain,

Yours sincerely,

Campsall, Jan. 29, 1839. EDWIN LANKESTER.

THE ENTOMOLOGICAL MAGAZINE.

To the Editor of The Naturalist.

SIR,—Being desirous of adding my humble testimony to that already before the public, on the impropriety of writing entomological descriptions in Latin, I should feel obliged by your inserting the following in *The Naturalist.*

I perceive that the *Entomological Magazine* is brought to a close, in conse-

quence, as I understand, of its limited circulation. This is what I long expected: not seeing how it was possible for a periodical devoted to *the few* to obtain a remunerating circulation. A great proportion of its pages was—I had almost said—irrelevant to the subject; and a still greater portion was written in Latin. The inconsistency of this latter practice appears to be dawning upon our "great potentates." The father of modern Entomology has set a good example in this matter, in the *Fauna Boreali-Americana*. The Rev. F. W. Hope, also, expresses himself decidedly an advocate for giving *English* descriptions. And, judging from the works of Mr. Stephens and Mr. Curtis, and the admirable *Entomologia Edinensis* of Messrs. Wilson and Duncan, we may fairly conclude that these gentlemen entertain the same opinion. Compared with English, Latin may, perhaps, afford greater facilities for describing concisely minute specific differences. But its superiority in this respect is not sufficient to justify its introduction. How many hundreds—nay, may I not say thousands?—are there who are prevented from entering the pale of Entomology by this most discouraging obstacle! There cannot be a doubt but that a Journal dedicated to this delightful science, moderate in price, and popular and instructive in character, would meet with ample support. Mr. Stephens complains of the paucity of *named* collections; but surely this cannot be matter of surprise, seeing that there is no work upon the species within the reach of the majority of students. May we express a hope that the author of the *Introduction to the Modern Classification of Insects* may be induced to supply this desideratum?

With a hearty wish for the success of *your* undertaking,

I am, Sir,

Very respectfully,

Your obedient servant,

57, *High-Street, Birmingham*, Henry Green.
Feb. 9, 1839.

[On one point we differ from our intelligent correspondent. We feel convinced that a Magazine devoted exclusively to Entomology, would *not* succeed in this country at the present time, on whatever plan it might be conducted. At the same time we anticipate with pleasure the period when every department of Zoology shall possess its organ—but not in our day. In the mean while let us omit no opportunity which may tend to elevate the study of Nature in the estimation of our fellow-creatures, and fear not for the result.—Ed.]

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

BRITISH ASSOCIATION.

The local Committee met in January to receive the report of the auditors. The total receipts were £4,563. 1s. 10d.; the disbursements £4,375. 17s. 4d.; leaving a balance of £187. 4s. 6d. A general report of the proceedings was ordered to be printed. A discussion then arose as to how the money was to be applied, and we believe it was settled that £100 should be given towards the purchase of a collection of shells, and the remainder to be divided between the Literary and Philosophical Society, Natural-History Society, Mechanics' Institution, Medical School, and the Society for the Promotion of the Fine Arts, in Newcastle.

DEVON AND CORNWALL NATURAL-HISTORY SOCIETY.

This Society, recently established at Plymouth, is, we are glad to hear, in a very flourishing condition. At every meeting new members are enrolled, and a number of valuable donations have from time to time been received.

EXTRACTS FROM FOREIGN PUBLICATIONS.

ZOOLOGY.

1. Shower of Fish near Calcutta.—We have received the following statement of an extraordinary fall of fish from a correspondent of undoubted veracity, who witnessed the occurrence himself, at a place not more than twenty miles South of Calcutta, in the Sunderbunds, by way of the salt-water lakes:—About two o'clock, p.m., on the 20th inst., we had a small shower of rain, and with it descended a quantity of live fish, about three inches in length, and all of one kind only. They fell in a strait line on the road from my house to the tank, which is about forty or fifty yards distant. Those which fell on the hard ground were of course killed from the fall; but those which fell where there was Grass growing, sustained no injury; I picked up a large quantity of them "alive and kicking," and let them go into my tank. Some people suppose that phenomena of this kind take place through the agency of the water-spouts, which draw up the fish, &c., from the rivers and tanks, and afterwards return them to the earth again in showers of rain; and there appears to me no other way of accounting

for the occurrence of the phenomenon, or that the fish should be found so far out of their element. The circumstance which struck me as most singular in connexion with this event was, that the fish did not fall helter-skelter, everywhere, "here and there;" but they fell in a strait line, not more than a cubit in breadth. The natives living in and about the place gave to the fish the name of "*Uka*;" but whether this be the right appellation, I cannot tell from my own knowledge.—*Calcutta Courier*, *Oct.* 24, 1838.—[A notice of a shower of *Toads* will be found in our Vol. II., p. 156.—Ed. *Nat.*]

2. Notes on the Condor.—Mr. Temple, in his *Travels in Peru*, says that he once had an opportunity of shooting a Condor. "It was so satiated with its repast on the carcase of a Horse, as to suffer me to approach within pistol-shot before it extended its enormous wings to take flight, which was to me the signal to fire; and having loaded with an ample charge of pellets, my aim proved effectual and fatal. What a formidable monster did I behold, screaming and flapping, in the last convulsive struggles of life! It may be difficult to believe that the most gigantic animal which inhabits the earth or the ocean can be equalled by a tenant of the air; and those persons who have never seen a larger bird than our mountain Eagle will probably read with astonishment of a species of that same bird, in the Southern hemisphere, being so large and strong as to seize an ox with its talons, and to lift it into the air, whence it lets it fall to the ground, in order to kill it, and prey on the carcase. But this astonishment must in a great measure subside when the dimensions of the bird are taken into consideration, and which, incredible as they may appear, I now insert from a note taken by my own hand:—When the wings are spread, they measure 16 paces (40 feet) from point to point; the feathers are 8 paces (20 feet) in length, and the quill part 2 palms (8 feet) in circumference. It is said to have strength enough to carry off a living Rhinoceros."—[Travellers are in the habit of indulging very pleasant day-dreams for the express edification of their poor untravelled brethren at home, for which we ought to be duly obliged; but we must be allowed to observe, that had Mr. Temple told us of a Condor so enormous that it easily seized in its talons a first-rate man-of-war, to the under side of which were attached two gigantic Whales, and had he added, that the bird, with half-extended wings, could not be turned on its side for examination without seriously endangering the safety of the moon, we should as soon have believed him as we now do on perusal of the above extract. There is no authentic account of the outspread wings of the Condor measuring more than *twelve feet* from point to point, and the usual size is much inferior to this. If the bird could bear off a Sheep in its talons, we should be well satisfied with its strength.—Ed.]

BOTANY.

3. Church Nosegays.—A curious custom exists in the country near the Elbe, but no mention is made of its origin. The peasant who possesses a bit of land, however small, never enters the church without having a nosegay in his hand, thus claiming the consideration due to a landholder in the parish. In the neighbourhood of Hamburg there is no garden that is not in part appropriated to the growth of flowers for church nosegays.

4. Novel Locality for a Plant.—A wretched fanatic, now in Bombay, took a slip of the Tulsi-tree, planted it in a pot, placed it in the palm of his left hand, and held it above his head, in which position it has remained for five years. The Tulsi has grown a fine shrub; the muscles of the arm which support it have become rigid and shrunken; the nails of the fingers have grown out, and they curl spirally downwards to a great length; yet the miserable devotee sleeps, eats, drinks, and seems quite indifferent to his strange position, having lost his remembrance of pain in public applause.—Mrs. Postans.—[The above is indeed a pitiable instance of the fruits of ignorance; but the poor Hindoo calls it virtue. In like manner does fanaticism in more civilized climes frequently pass for piety, and we know it not!—Ed.]

REVIEWS OF NEW PUBLICATIONS.

The Natural History of the Sperm Whale; its Anatomy and Physiology—Food—Spermaceti—Ambergris—Rise and Progress of the Fishery—Chase and Capture—"Cutting-in" and "Trying-out"—Description of the Ships, Boats, Men, and Instruments used in the Attack; with an Account of its favourite Places of Resort. To which is added a Sketch of a South-Sea Whaling Voyage; embracing a Description of the Extent, as well as the Adventures and Incidents that occurred during the Voyage in which the Author was personally engaged. By Thomas Beale, Surgeon, &c. &c. London: *John Van Voorst*, Paternoster-Row. 1839.

Such is the interest and such the importance of this volume, that, despite the fact of its being a second edition, and the very trying circumstance of the length of its title, we shall on the present occasion depart from our usual custom touching new editions, and treat of its contents at some length. The work derives its attractive nature from no merit of literary composition, for to that the intelligent author does not aspire; but from the originality of its information, and the judicious manner in which this is digested.

"What an impenetrable veil covers our knowledge of Cetacea!" exclaims M. Lesson; "groping in the dark, we advance in a field strewn with thorns." "No branch of Zoology," says Scoresby, "is so much involved as that which is entitled Cetology." According to Cuvier, "*Toutes ces indications incomplètes ne servent qu'a mettre les naturalistes à la torture.*" Such has long been the state of this interesting department of zoological science; and such, to a very considerable extent, it still remains, notwithstanding the able researches of many learned naturalists of the present day. The Sperm Whale, so valuable in a commercial point of view, has been most grievously calumniated; for the sailors who have been for a long course of years pursuing this Leviathan of the "vasty deep" deem themselves fit chroniclers of its natural history, thereby palming off upon the credulous public, and even upon naturalists, a singular mixture of truth and error; which has at length become so completely wound up with the very idea of the Sperm Whale, that he who attempts a more lucid and correct delineation of its history, has assuredly undertaken a task sufficiently arduous.

Mr. Beale justly observes (p. 2), that while every one has heard of the Greenland Whale-fishery, few connect the pursuit of this "sea beast" with the smiling latitudes of the South Pacific, and the Coral-isles of the Torrid Zone. The Sperm Whale, moreover, has been falsely accused with respect to its vocal powers, the most eminent cetologists having represented it as uttering sundry terrible groans and dismal roars, while our author contends that its capability in this respect is limited to a trifling hissing during the expiration of the spout (p. 3). While this monster has actually been calmly ploughing the ocean depths in search of its lawful and appointed prey, avoiding with the most Sheepish timidity the slightest appearance of danger, its biographers have represented it as the most savage of animals. Whether, on the one hand, the said biographers have *intentionally* mis-stated the case, or whether, on the other, certain moderate-sized, peaceably-disposed inhabitants of Neptune's watery domain would return a verdict in favour of the Whale's amiability, it is not for us to determine; suffice it to say, that the mere approach of a common Whaling-boat causes in its mind a degree of alarm sufficient to repel the huge body into the depths of the sea (p. 4).

By the way, pray who is Monsieur "Lacapedé"? At first we passed this over as a slip of the press—for such a thing never entered our head as to imagine for a moment that any gentleman, British or Foreign, could possibly be quoted by Mr. Beale in a natural-historical matter, and at the same time be unknown to us. We shrewdly suspect that Lacépède is the name intended. But Mr. Beale's genius was never intended for the frivolities of the French tongue. He is clearly of opinion—and for ought we know or care to the contrary he may be right—that the nearer this "jargon" approaches our own language, the better.

This will satisfactorily account for the above and other *corrections* in Gallic names and words. Our gay neighbours across the Channel might profit *philologically*, as well as cetologically, from Mr. Beale's book.

Lacépède divides the Sperm Whale into no less than eight species, Brisson into seven, Linnæus into four, Bonnaterre into six, and Desmarest, we believe, into nine! At p. 14 we have representations of the outline of this animal, the one after F. Cuvier, the other according to Beale and others. These two figures differ materially; and no wonder, seeing how difficult a matter it must obviously be to sketch such a creature in a natural attitude.

The opinion that the Sperm Whale throws up water with its spout, has been universally believed from the days of the early naturalists to the present time. But though Pliny was spared the trouble of original investigation in the days of yore, and although M. F. Cuvier still propagates the doctrine, it appears (p. 16) from the personal observations of our author, on the spoutings of hundreds of Whales in the North and South Pacific Oceans, that not one ever ejected water in the manner represented. The error has very naturally arisen from the fact of *dense clouds of vapour* being sent forth by the "spout"—so that if it does not exactly "end in smoke," it appears, after all, to be mere *vapouring*.

Mr. Beale passes a high encomium on Professor Bell's *British Quadrupeds;* but complains (p. 18), that while Sir William Jardine has "thought proper to fill his chapter on the natural history of the Sperm Whale entirely from the first edition of this work, he does not appear to be convinced of its veracity, and at the same time (I am compelled to observe) to display a considerable want of accurate information on the subject." The work here alluded to is a volume of the *Naturalist's Library*, noticed in our Vol. II., p. 51.

One of the most striking personal peculiarities—so to speak—of the Sperm Whale, is the disproportionate and apparently unwieldy bulk of its head. But though the contrivances of Man are imperfect, and open to correction, Nature's works are surpassingly beautiful. Thus the Whale's bulky head, at first sight a lamentable piece of mismanagement, is the huge animal's best safe-guard, consisting, as it does, of a comparatively light frame-work, filled with an oily substance considerably lighter than water.

It is conceived (p. 35) that the Whale, swimming merrily along with the glistening-white roof of the mouth and tongue exposed, is an object so irresistibly attractive, as to cause numbers of the finny tribes to flock to witness the spectacle, the only fee demanded for the exhibition being the lives of the audaciously curious little creatures. The Crocodile, the American Ant-eater, and the Dragon-fly adopt a similar stratagem, with the same view, and on the same liberal terms. Our author fortifies this position by the fact that Whales will remain in "good case" long after they have been deprived of sight, or after severe injuries to the

lower jaw, in either of which cases the retail mode of fishing would prove an exceedingly profitless speculation. Old Whalers assert that these injuries are caused by the combats of the old "bulls." Here Mr. Beale is for once at fault, stating that he has never been able to witness the alleged fights, although he inclines in favour of their probability, from the jealousy of the males, and the frequent occurrence of deformities. On the whole, therefore, it is concluded that this "marine woonder's" principal article of diet (the Squid Cuttlefish, *Sepia octopus*) is obtained by swimming with the huge jaws held open as a kind of fish-market—that bourne from whence no finny traveller ever returns.

But the "woonder of woonders" is when this gigantic creature becomes frolicsome, and exhibits its dexterity in "Horse-play." We allude to its habit of descending to a considerable depth in the sea, and then suddenly leaping entirely out of the water, by rapid and repeated strokes of its tail—doubtless to the extreme edification of every thing having the breath of life for miles round. This manœuvre is termed "breaching," and is supposed to be resorted to in order to free the king of the ocean from the numerous and troublesome parasites that make free with his majesty's person. This hypothesis derives support from the fact of a portion of the terrific weapon of the Sword-fish having been found imbedded in the side of a Whale stranded on the Yorkshire coast, and which was probably broken off by the violent struggles between these two warriors of the deep. But this is not the end of the tale. For it is said that while the Sword-fish attacks the monarch from below, preventing him from gaining his own feeding-ground beneath, another fish equally relentless, the Thresher, leaps out of the water, and falls upon him from above (p. 49). Verily, there is no great pleasure in royalty, either on land or by sea!

The Sperm Whale, however, has much to recommend it to notice, whether it be dead or alive. Amongst its many excellent qualities, we learn (p. 51) that it is sociable. Whether or not such was the case in the time of our ever-to-be-venerated forefathers, we will not undertake to say, seeing that in future all persons presuming to write on Cetology are necessarily amenable to Mr. Surgeon Beale for their opinions; but such is the fact as regards our own days, that the "march of intellect" has found the "schoolmaster abroad" in the wild, unbounded sea. Whales have their schools and schoolmasters as well as men. These animals assemble in herds, some consisting entirely of young males, others almost exclusively of females; these the sailors term "schools." The "ladies' schools"—must it be declared?—are governed by from one to three large "bulls," *i. e.*, old males! These "schoolmasters" are excessively jealous of the intrusion of others of their profession. The result of this pleasing system of cetaceous education is, that Whales can communicate with each other by signals at great distances, forming a well-organised plan of telegraphic communication. We

expect to find Mr. Beale enriching his next edition with a complete report of the "Marine Education Committee," of the number of young Whales that receive the rudiments of telegraphic education, of the proficients, and of those hapless wretches that are wholly destitute of instruction. At present our author is of opinion (p. 54) that *all* Sperm Whales, both great and small, have *some* method of communication, though what that method is, remains shrouded in interesting obscurity.

If the Sperm Whale is formidable in size and appearance, Mr. Beale had abundant proof that its prey is no chicken. On one occasion the "beak" of a *Sepia* (the "Rock Squid" of sailors) sprang upon his bare arm, for which it evinced considerable affection:—

"A sensation of horror pervaded my whole frame when I found this monstrous animal had affixed itself so firmly. Its cold slimy grasp was extremely sickening, and I immediately called aloud to the captain, who was searching for shells at some distance, to come and release me from my disgusting assailant—he quickly arrived, and taking me down to the boat, during which time I was employed in keeping the beak from my hand, quickly released me by destroying my tormentor with the boat-knife, when I disengaged it by portions at a time."—p. 68.

At p. 77, *et seq.*, we are favoured with a description of the skeleton of an adult male Sperm Whale in the possession of Sir Clifford Constable, Bart., of Burton-Constable Hall, Yorkshire, but into this our limits forbid us to enter.

It appears that in 1686 the source of spermaceti, and its value, were not generally known. In the seventeenth century it was extensively employed both in external and internal diseases; but it has been gradually losing ground in public estimation as an internal remedy, since the delivery of Mr. Hunter's scientific account of it in 1787, before the Royal Society (p. 128).

The origin of the Whale-fishery is another point enveloped in considerable mystery; but it appears that the Americans have the honour of commencing an attack which eventually ripened into a general crusade, from almost every civilized nation, against this huge but naturally inoffensive animal. In 1771 the Americans were engaged with great ardour in this pursuit (p. 142); and Mr. Burke, in his celebrated speech on American affairs in 1774, says that "Neither the perseverance of Holland, nor the activity of France, nor the dexterous and firm sagacity of English enterprise, ever carried this most perilous mode of hardy industry to the extent to which it has been pursued by this recent people,—a people who are still in the gristle, and not hardened into manhood."

It is to this important trade, we are informed (p. 146), that we owe the opening of commerce with South America, the discovery of Van Diemen's Land, and Australia. We further learn that while Whales are sometimes met with at no great distance from land, six months often elapse before a single individual is seen, although a constant watch is kept up from the mast-head.

Let us now hear Mr. BEALE in his own words:—

"The scenes which sometimes occur during the chase and capture of this Whale defy description. Let the reader suppose himself on the deck of a South-Seaman, cruising in the North Pacific Ocean at its Japanese confine—he may be musing over some past event, the ship may be sailing gently along over the smooth ocean, every thing around solemnly still, with the sun pouring its intense rays with dazzling brightness; suddenly, the monotonous quietude is broken by an animated voice from the mast-head, exclaiming, 'there she spouts!' The captain starts on deck in an instant, and inquires, 'where away?' but perhaps the next moment every one aloft and on deck can perceive an enormous Whale lying about a quarter of a mile from the ship, on the surface of the sea, having just come up to breathe—his large 'hump' projecting three feet out of the water, when at the end of every ten seconds, the spout is seen rushing from the fore-part of his enormous head, followed by the cry of every one on board, who join heart and soul in the chorus of 'there again!' keeping time with the duration of the spout. But while they have been looking, a few seconds have expired—they rush into the boats, which are directly lowered to receive them—and in two minutes from the time of first observing the Whale, three or four boats are down, and are darting through the water with their utmost speed towards their intended victim, perhaps accompanied with a song from the headsman, who urges the quick and powerful plying of the oar with the common Whaling chant of

'Away my boys, away my boys, 'tis time for us to go.'

"But while they are pushing along, the Whale is breathing, they have yet perhaps some distance to pull before they can get a chance of striking him with the harpoon. His 'spoutings are nearly out,' he is about to descend, or he hears the boats approaching. The few people left on board, and who are anxiously watching the Whale and the gradual approach of the boats, exclaim, 'Ah, he is gone down!' yet he spouts again, but slowly, the water is again seen agitated around him, the spectators on board with breathless anxiety think they perceive his 'small' rising in preparation for his descent; 'he will be lost,' they exclaim, for the boats are not yet near enough to strike him—and the men are still bending their oars in each with all their strength, to claim the honour of the first blow with the harpoon. The bow-boat has the advantage of being the nearest to the Whale; the others, for fear of disturbing the unconscious monster, are now doomed to drop astern. One more spout is seen slowly curling forth—it is his last, he is rising—his 'small' is bent, his enormous tail is expected to appear every instant, but the boats shoot rapidly alongside of the gigantic creature. 'Peak your oars,' exclaims the mate, and directly they flourish in the air; the glistening harpoon is seen above the head of the harpooner, in an instant it is darted with unerring force and aim, and is buried deeply in the side of the huge animal. It is 'socket up;' that is, it is buried in his flesh up to the socket which admits the handle or 'pole' of the harpoon. A cheer from those in the boats, and from the seamen on board, reverberates along the still deep at the same moment. The sea, which a moment before was unruffled, now becomes lashed into foam by the immense strength of the wounded Whale, who with his vast tail strikes in all directions at his enemies. Now his enormous head rises high into the air, then his flukes are seen lashing everywhere, his huge body writhes in violent contortions from the agony the 'iron' has inflicted. The water all around him is a mass of foam, some of it darts to a considerable height—the sounds of the blows from his tail on the surface of the sea can be heard for miles.

"'Stern all,' cries the headsman! but the Whale suddenly disappears; he has sounded; the line is running through the groove at the head of the boat, with lightning-like velocity—it ignites, from the heat produced by the friction, but the headsman, cool and collected, pours water upon it as it passes. But an oar is now held up in their boat; it signifies that their line is rapidly running out; two hundred fathoms are nearly exhausted; up flies one of the other boats, and 'bends on' another line, just in time to save that which was nearly lost. But still the monster descends;

he his seeking to rid himself of his enemies by descending deeply into the dark and unknown depths of the ocean. They next bend on the 'drouges,' to retard his career—but he does not turn; another and another have but slight influence in checking the force of his descent; two more lines are exhausted—he is six hundred fathoms deep! 'Stand ready to bend on,' cries the mate to the fourth boat (for sometimes, though not often, they take the whole four lines away with them—800 fathoms!!); but it is not required, he is rising. 'Haul in the slack,' observes the headsman, while the boat-steerer coils it again carefully into the tubs as it is drawn up. The Whale is now seen approaching the surface; the gurgling and bubbling water which rises before also proclaim that he is near; his nose starts from the sea; the rushing spout is projected high and suddenly, from his agitation. The 'slack' of the line is now coiled in the tubs, and those in the 'fast' boat haul themselves gently towards the Whale; the boat-steerer places the headsman close to the fin of the trembling animal, who immediately buries his long lance in the vitals of the Leviathan, while, at the same moment, those in the other boats dart another harpoon into his opposite side, when 'stern all' is again vociferated, and the boats shoot rapidly away from the danger.

"Mad with the agony which he endures from these fresh attacks, the infuriated 'sea beast' rolls over and over, and coils an amazing length of line around him; he rears his enormous head, and with wide-expanded jaw, snaps at every thing around; he rushes at the boats with his head—they are propelled before him with vast swiftness, and sometimes utterly destroyed.

"He is lanced again, when his pain appears more than he can bear; he throws himself, in his agony, completely out of his element; the boats are violently jerked, by which one of the lines is snapped asunder; at the same time the other boat is upset, and its crew are swimming for their lives. The Whale is now free! he passes along the surface with remarkable swiftness, 'going head out;' but the two boats that have not yet 'fastened,' and are fresh and free, now give chase; the Whale becomes exhausted, from the blood which flows from his deep and dangerous wounds, and the 200 fathoms of line belonging to the overturned boat, which he is dragging after him through the water, checks him in his course; his pursuers again overtake him, and another harpoon is darted and buried deeply in his flesh.

"The men who were upset, now right their own boat without assistance from the others, by merely clinging on one side of her, by which she is turned over, while one of them gets inside and bales out the water rapidly with his hat, by which the boat is freed, and she is soon again seen in the chase.

"The fatal lance is at length given,—the blood gushes from the nostrils of the unfortunate animal in a thick black stream, which stains the clear blue water of the ocean to a considerable distance around the scene of the affray. In its struggles the blood from the nostrils is frequently thrown upon the men in the boats, who glory in its show.

"The immense creature may now again endeavour to 'sound' to escape from his unrelenting pursuers; but it is powerless,—it soon rises to the surface, and passes slowly along until the death pang seizes it, when its appearance is awful in the extreme.

"Suffering from suffocation, or the stoppage of some important organ, the whole strength of its enormous frame is set in motion for a few seconds, when his convulsions throw him into a hundred different contortions of the most violent description, by which the sea is beaten into foam, and boats are sometimes crushed to atoms, with their crews.

"But this violent action being soon over, the now unconscious animal passes rapidly along, describing in his rapid course a segment of a circle; this is his 'flurry,' which ends in his sudden dissolution. And the mighty rencontre is finished by the gigantic animal rolling over on its side, and floating an inanimate mass on the surface of the crystal deep,—a victim to the tyranny and selfishness, as well as a wonderful proof of the great power of the *mind*, of Man."—p. 167.

Subsequently a gloom was cast on the minds of our voyagers by one of the men

falling overboard, without a prospect of his being saved from a "watery grave." The moment the poor fellow finally disappeared from the light of day, a large Albatros alighted on the water at the very spot where he was seen last. Occasionally, too, both boats and ships are utterly destroyed by the Whales in these truly hazardous voyages.

At the commencement of our present No. we insert a favourable specimen of the illustrations in Mr. BEALE's book. It represents a scene from a tale picked up by our author in the Sandwich Isles, and of which the following is a slight sketch :—

In the Sandwich Islands there exists a barbarous custom of sacrificing to the "Great Spirit" five young men, on the death of each of their kings. Now on the death of HOAPILI, king of Oahoo, a heavy gloom fell upon the people. Many a brave youth and loving maiden felt a pang rush through his or her heart on hearing the news, for no one knew who would be marked for the slaughter. The victims were selected by the chief of each district. In the village of Waikukii, of which NAHI was the chief, lived TUANOA, a young man, and KINAU, his betrothed bride. Both were much beloved in the land, and they had loved each other from early childhood. But there had been an eye long and ardently fixed on KINAU, and she was well aware of the fact, much to her sorrow; and although TUANOA noticed her grief, yet did she not reveal its cause to her beloved, for she knew that had she done so, the result would probably have been some rash act on his part, involving the ruin of both. It was the powerful chief NAHI who aspired to the smiles of KINAU! He even obtained an interview with her, and declared his passion; but she resolutely refused to listen to his advances. "What!" said the haughty chief, "do you refuse to listen to the voice of NAHI? Daughter of KUAKINI, and the beloved of TUANOA! Go from the presence of NAHI, and let there be no more said!" KINAU knew the cruel and vindictive spirit of NAHI, but the disgust of his people, and the frequent reprehensions of the late king, had recently caused him to be more careful, and it was therefore hoped that he would not venture to lay his hand on TUANOA. But still KINAU kept the secret, even while the awful chasm which might be opened to receive her in case of the king's death, daily expected, yawned before her mental vision. One evening as the "orb of day" was once more descending in state into the dark bosom of the ocean, the lovers were reclining on the Moss-bedecked rocks, in the beautiful Valley of Menoa—a distant cry of sorrow fell upon their ears. "The king is gone!" shrieked the unhappy maid, and immediately fell senseless on the earth. While TUANOA and the neighbours were recovering the girl, a band of persons, with dishevelled hair, bloody bodies, and frenzied aspect, approached, and proclaimed with loud wailings that HOAPILI the Good had given his last breath to the winds. They presented the fatal and well-known death-

summons to TUANOA in the usual form. This choice amazed the people, for the *best* instead of the *worst* man had been selected. KINAU was mad with grief. She instantly determined on making the perilous descent of the Pelé of Nuanu [see the plate], at the bottom of which, two thousand feet below the surface of the earth, lived KELKUEWA, the enchanter, respecting whom and his abode there were the most terrible tales in circulation. Yet, despite the cold, the darkness, the ghastly winged tenants of this gloomy abyss, and endless other evils, did the gentle KINAU brave these dangers. At length looking up, she beheld a venerable man descending the Pelé; when he had reached the spot where she was bathing her bleeding feet in the cascade, he said,—"Daughter of KUAKINI, and beloved of TUANOA, I am he whom you seek. I have watched and feel astonished at your strength, fortitude, and love. Arise, go to the valley of your fathers, and rest with thy neighbours, for I have seen a great Spirit, who, before to-morrow's sun reacheth the valley of Nuanu, shall come, and save thy TUANOA from the blood-consuming fire!" The enchanter then seized the hand of the enraptured girl, and saw her descend to the valley of her brothers. The morn of the dreadful tragedy arrived. After the first victim had been disposed of, TUANOA was bound to the stake. He observed KINAU, but could not speak. The poor man was on the point of being executed, when his beloved, unable longer to restrain herself, rushed through the crowd, and threw herself on his neck. The lovers were quickly separated by the attendants, and the murder was proceeding, when the enchanter appeared among the people. He pointed to an object on the sea at a great distance. During the confusion, a stone was hurled by an unknown hand, which struck NAHI, and killed him in an instant, but the event scarcely received attention. The object on the ocean approached rapidly; it appeared larger every moment; fear and curiosity increased; occasionally its apparent wings shook; then anon the whole mass seemed to stoop to the surface of the water. The chiefs, priests, and people went down to the edge of sea, the surviving victims and their kindred followed, and the prophecy was fulfilled: they were liberated by common consent. Never can poet or painter describe or represent the two enraptured lovers as they appeared walking together on the beach, having but "one soul in a divided body."

Reader! the great spirit which so rapidly approached, and was bringing to those islanders light to disperse their darkness, humanity and religion to abolish their cruelties, the arts and sciences to banish their ignorance—was the great spirit of our immortal navigator, COOK, who had just discovered those fertile isles, and whose ship had been observed by the enchanter on the previous evening, from the heights of the Pelé of Nuanu!

In his description of a "South-Sea Whaling Voyage," Mr. BEALE gives further particulars relative to the interesting animal which forms the principal

subject of his volume; but we cannot follow him further. In taking leave of this work, let us hope to have the pleasure of early welcoming a *third* edition of the same excellent and most instructive treatise.

Vegetable Organography; or, an Analytical Description of the Organs of Plants. By M. Aug. P. De Candolle. Translated by Boughton Kingdon. With Plates. London: *Houlston and Stoneman*, 65, Paternoster-Row. Part. i. February, 1839. pp. 48. 8vo.

We are very glad that there is at length a prospect of our possessing a good English version of De Candolle's *Organography* and *Physiology*, for the latter will be commenced at the conclusion of the former. There will of course be difference of opinion respecting the views of De Candolle in physiology and classification; but every candid botanist will unhesitatingly admit that he claims a place among the most philosophic naturalists of the present day. Thus far the translation appears to be good, and the lithographic illustrations are neatly executed. We shall probably notice the work again at a future time. It will be published in monthly numbers, uniform with Van Voorst's zoological series.

The Meteorologist; or a Daily Account of the Weather. And a complete Almanack for 1839. Being the 3rd after Bissextile, and the 2nd and 3rd of the Reign of her Gracious Majesty, Victoria I. By W. J. Simmonite, Teacher of Mathematics, and Author of the Meteorological Tables which appear weekly in the *Sheffield Iris*. Second edition. London: *J. Limbird*, 143, Strand; *A. Whitaker*, Sheffield. 12mo. pp. 36.

Weather-prophesying appears, truly, to be a profitable, or at all events a *favourite*, calling at the present time. Mr. Simmonite gives great latitude to his terms, as, *e. g.* :—"*Changeable.*—A day in which dullness, brightness, rain or fair, or *any two of these phenomena*, occur." Nor are "seasonable" and "pleasant" remarkably explicit predications, even in connexion with our prophet's "explanations." Yet, with these circumstances in his favour, we cannot discover any thing in Mr. Simmonite's Almanac to warrant the belief that his skill is overpowering in this branch of science. We are fully aware that, in thus expressing our individual opinion, we run the risk of being classed among those "illiterate and ignorant" persons against whom our author's preface indulges in so eloquent an appeal. Mr. Simmonite's prognostications of the weather appear weekly in the *Sheffield Iris*, where he is "author of the *Meteorologist;*" and in the latter publication, lo! he appears as author of the tables in the *Sheffield Iris!* In his third edition we would suggest to the author the following title,

which in our estimation would impart quite as accurate an idea of the number of his published works as he has now vouchsafed to us:—"*The Meteorologist*, by W. J. Simmonite, author of the *Meteorologist*."

Respecting the latitude our prophet allows himself, might not the following be a fitting satire on his predictions?—"Jan. 1. Both lucky and unlucky. 2. Frosty if a dry cold atmosphere. 3. Weather warm if the sun be powerful. 4. Fortunate or otherwise. 5. Tally the second. 6. The moon in her due course. 7. Lucky for tradesmen with an increase of business coming in this day. 8. Weather fair, if not showery and foggy. 9. Cold or warm, as it may be. 10. Fortunate or otherwise. 11. The sun's perpendicular rays illuminate many parts of the earth this day. 12. Many deaths will occur. 13. The moon in her due course. A fortunate day for many. 14. Frost may still be expected. 15. Fair weather, or as it may be. 16. More or less rain or fair weather."

Our opinion, however, will go for nothing in the eyes of Mr. S., even though based on the *fact* that his predictions are unworthy of confidence, for has not an anonymous correspondent passed a vote of confidence in Mr. Simmonite through the medium of the *Sheffield Iris*? Sometimes persons are in the habit of praising themselves, after having in vain waited for the applause of others. Such a course may be adopted either under a real or a feigned signature.

But Mr. Simmonite—seeing that he had no hand in the creation of the world, which he most assuredly should have had—has conceived "*seven thousand rules*," by which, we presume, the weather *ought* to have been governed. Where the actual weather fails to fall in with the mandates from "Coalpit-lane Academy," of course it is a *lapsus Naturæ*.

However, if the prophet pleases himself by the occupation, by all means let him continue it; and, to parody the style of writing adopted by some of his fraternity, we venture to predict that *the Almanac will be pronounced good by those who like it.*

LITERARY INTELLIGENCE.

Mr. Irvine has recently published a *London Flora*, but we have not seen it.—Preparing for publication, a *Synopsis of British Insects*, by Mr. Curtis.—Waterton's excellent little volume entitled *Essays on Natural History*, has already reached a second edition.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Humane Mode of killing Animals.—We open our Miscellanies this month with good news for that portion of the animal creation doomed to be slaughtered for Man's food; and if they are as intelligent as the Dog (mentioned in the *Pickwick Papers*) which read with thoughtful visage the injunction to shoot all canine trespassers on the premises, they will surely record us a vote of thanks for our kindness. The *Sheffield Patriot*, of Jan. 8, 1839—patriotically inclined towards the brute creation—informs us how Dr. Carson, F.R.S., of Liverpool, after a long course of patient investigation, discovered a mode of killing animals which is not only to be very delightful for themselves, but is to increase the value of the meat one-tenth. We confess we took just such an interest in this subject as befitted our position; but, lo! after occupying several minutes of our inexpressibly valuable time in perusing an elaborate statement of the case, we were, as regards the main point—the *modus operandi*—in exactly the same state as before. But the animals must have patience, and so must we, for no doubt Dr. Carson intends to take out a patent for his discovery.* Some of the *butchers*, we dare say, will not be over thankful to the learned Doctor for his suggestion, since they occasionally talk very complacently of Sheep, &c., being "pleasant animals to kill." However, for the present the matter is wrapt in the most profound and interesting mystery; and no one but the Doctor himself can say whether we are to have the phenomenon of Pigs "giving up the ghost" of their own accord when required so to do, whether it be a self-acting humane everlasting incomparable machine for depriving so many Swine of their ghosts within the minute, or whether our prejudices are to be alarmed by something still more direful.—We can only promise to await, with befitting philosophy, the statement of the "woonder," and *hope* to receive it with requisite calmness when avowed.—Ed.

Incubation of the Tern.—In your paper on Gould's *Birds* in the December number, you observe (p. 124) that the Tern has been said to leave her eggs to the influence of the sun to be hatched. Those persons with whom the opinion originated have not observed accurately. On Blakeney Beach, on the Norfolk coast, I have had frequent opportunities of watching these two graceful fishers of the deep during the season of incubation. They resort there in numbers, and deposit their eggs among the shingles, sand, and broken shells, which form beds, or "casts" as they are termed, intersected and varied with small ridges of drift

* The Doctor *has* since obtained his patent.

sand-hills, held together by *Arundo arenaria*, and covered with Lichens and marine plants. These birds lay their eggs in such accessible places, and have so many enemies who seek to make puddings and custards at their expense, in the guise of sailor-boys, sturdy old tars, and shoe-and-stockingless idlers whose homes border on the sea, that they become extremely cautious, and rise from their nests, where they have been sitting on their eggs, when a person is yet a considerable distance from them, flying over the white pebbles at first, and then rising from the site of their nests. I have seen them, as any one may with a telescope, where the birds abound. The stones and sand, however—which become remarkably hot on bright days during the breeding-season—must contribute to forward their eggs.—Charles Drosier, *Boughton, Norfolk, Jan.* 6, 1839.

Varieties of the Blindworm.—I perceive in the Dec. No. of the *Edinburgh Journal of Natural History*, that the Editor has quoted the description I gave, at p. 85 of the present volume of *The Naturalist*, of *Anguis eryx*, and meets my request for further information by stating the result of his own observation. Mr. MacGillivray describes a specimen in his possession, which was captured in Buchan, and adds :—"Such varieties cannot be considered as specific. Sometimes the Slow-worm has the upper parts without lines at all, sometimes with a single line, and sometimes with seven lines; the lower parts either uniformly bluish-black, or with a broad band of the same colour at the back, and on each side a central dark band. * * * Some specimens are destitute of white spots on the lower part of the abdomen, or tail, but in most individuals they are more or less apparent." These remarks evidently render the *specific* claims of *A. eryx* very doubtful. In addition, however, I should wish to be informed whether *A. fragilis* has ever been found 14 or 15 inches in length *without* possessing the other characteristics of *A. eryx*.—Peter Rylands, *Bewsey House, Warrington, Jan.* 12, 1839.

Chain of Beings.—Bitumen and Sulphur form the links between earth and metal—Vitriol unites metals with salts—crystallizations connect salts with stones—the Amianthes and Lithophytes form a kind of tie between stones and plants—the Polyp unites plants with insects—the Tube-worm seems to lead to shells and reptiles—the Water-serpent and the Eel form a passage from reptiles to fishes—*Anas nigra* is a medium between fishes and birds—the Bat and the Flying-squirrel link birds and quadrupeds—and the Monkey equally gives the hand to quadrupeds and to Man.—[The above paragraph, which has lately been "going the round of the newspapers," doubtless to the great edification of their readers, is not remarkable for accuracy. We were not, previous to the publication of this paragraph, aware that the Black Scoter (*Oidemia nigra*, Flem.; "*Anas nigra*," Linn.) bore any very close relationship to a fish! We presume

Ornithorhynchus paradoxus is the animal alluded to, though the clause would still remain a little *paradoxical*.—Ed.]

Stork's Nest at Manheim.—In one of the streets [of Manheim] I got an opportunity of sketching a Stork's nest.—Most of the chimnies are, apparently, constructed for their accommodation, it being thought lucky to have a pair of these birds over the roof. Above the vent, rarely pervaded by smoke, charcoal being much in use, a flat piece of Iron, supported by legs about a foot high, is placed. On this an immense heap of straw and other materials, carried thither by the birds, projects considerably over all around. In the present instance the two bipeds were enjoying their *otium cum dignitate* and elevation of aspect with great satisfaction. The nest must, doubtless, be drenched through and through with the rain, being entirely without shelter, and, as a habitation, the most inconvenient that could possibly be devised. What amused me exceedingly was, a host of impudent Sparrows that appeared to have taken possession of the lower part, and were screaming, fluttering, and playing at hide-and-seek in the most unceremonious manner possible; the grave owners thereof never appearing to take the least notice of the intruders.—Roby's *Seven Weeks in Belgium, &c.*

Phosphoric Lights in the higher Animals.—At p. 221 we noticed the erroneous assertion of Dr. Müller,—"*Unter den höheren Thieren kennt man kein Leuchten*," &c., stating at the same time that phosphoric lights are seen at night in the breast of the Bittern. The fact is pretty generally known to British naturalists at the present day; but as one of our readers wishes to learn our authority for the statement, we may observe, that an ornithologist residing at Philadelphia was informed, in 1828, that the Great American Bittern exhibited a bright light at the breast, in order to assist its nocturnal fishing. This appeared so extraordinary, that the gentleman took some trouble to ascertain the truth of the report, which was "confirmed by several gentlemen of undoubted veracity," and especially by Mr. Franklin Peale, the well-known American naturalist. In the article "Bittern" in Partington's *British Cyclopædia of Natural History*, the writer (Mr. Mudie we believe) observes, that "the rank flavour of the flesh is in no small degree owing to *phosphorus* or sulphur (*especially the former*) in the food." No doubt, as far as we are aware, has ever been cast upon the fact, as related by Mr. Peale and others. We should be glad to learn the experience of our readers on this subject.

Several instances of luminosity have been noticed in the Horse, and published on both sides the Atlantic; but the cause is in this case extremely obscure, some attributing it to phosphorescence, some to electricity, and some to the presence of a Glow-worm, or other insect.—Ed.

A Preserver of Animated Nature.—A hair-dresser in Bedford (says a

cotemporary), who sometimes exercises his ingenuity in stuffing *dead* animals, has lately been inspired with a touch of the sublime. He has had a large board affixed on the front of the house, bearing in striking letters, "Preserver of *animated* Nature"!—*Jan.* 26.

Zoological Exhibition in a Theatre.—Mr. Boswell, the friend and biographer of Johnson, when a young man, went to the pit of Covent-Garden Theatre, in company with Dr. Blair, and, in a frolic, imitated the lowing of a cow; and the universal cry in the gallery was—"Encore the cow!" This was complied with; and in the pride of success Mr. Boswell attempted to imitate some other animal, but with less success. Dr. Blair, anxious for the fame of his friend, addressed him thus:—"My dear Sir, I would confine myself to the cow."—*Northern Star.*

Tortoise-shell Butterfly abroad at Christmas.—A beautiful Tortoise-shell Butterfly (*Vanessa Urticæ*)—better known in this neighbourhood and the South of Scotland as the Devil's or Witch's Butterfly—was brought to our office on Tuesday, caught in the open air on the preceding day, and in the full vigour of strength, although within a week of Christmas.—*Berwick Advertiser, Dec.* 22, 1838.

BOTANY.

Herne's Oak.—To set the matter at rest, I will now repeat the substance of some information given to me relative to Herne's Oak by Mr. Ingalt, the present repectable bailiff and manager of Windsor Home Park. He states that he was appointed to that situation by George III., about forty years ago. On receiving this appointment he was directed to attend upon the King at the Castle, and on arriving there he found his Majesty with "the old Lord Winchilsea." After a little delay the King set off to walk in the park, attended by Lord Winchilsea, and Mr. Ingalt was desired to follow them. Nothing was said to him until the King stopped opposite an Oak-tree. He then turned to Mr. Ingalt and said, "I brought you here to point out this tree to you. I commit it to your especial charge, and take care that no damage is ever done to it. I had rather that every tree in the park should be cut down, than that this tree should be hurt. *This is Herne's Oak.*" Mr. Ingalt added, that this was the tree still standing near Queen Elizabeth's Walk, and is the same which I have mentioned and given a sketch of in my *Gleanings in Natural History.* Sapless and leafless it certainly is, and its rugged bark has all disappeared.

> "Its boughs are moss'd with age,
> And high top bald with gray antiquity;"

but there it stands, and long may it do so, an object of interest to every admirer of our immortal bard. In this state it has been, probably, long before the recollec-

tion of the oldest person living. Its trunk appears, however, sound, like a piece of ship-timber, and it has always been protected by a strong fence round it—a proof of the care which has been taken of the tree, and of the interest which is attached to it.—Edward Jesse, *in the Times.*

Mangel-Wurzel Potato.—In the course of last Spring a gentleman in this city procured four of the recently-introduced Mangel-Wurzel Potatos. These four tubers were cut into thirty-six sets, and planted with the usual quantity of farm-yard manure upon a headland, in drills three feet apart, and leaving twelve inches between each set; the whole occupying exactly twelve square yards. On being dug out, a few days since, the produce weighed 112lbs., being at the rate of 35 tuns or 280 barrels of 20 stones each per acre. If the feeding qualities of this variety be at all commensurate with its productiveness, it must prove a valuable acquisition to the agriculturist.—*Waterford Mirror, Jan.* 1839.

GEOLOGY.

Creation of the World.—Were we not restrained by prudential considerations, we should enlarge on these geological phenomena, and define the true meaning of the word "creation," which we conceive to be grossly misunderstood; but the voice of science would be drowned in the blatant clamors of intolerance. We will, however, venture to state that creation is not a single, finite, and determined act, but that it is consecutive, and even now in operation, and will continue in operation as long as the physical world exists, constantly varying the three known conditions of matter, the gaseous, the liquid, and the solid, and thus manifesting, at least to our humble conviction, the omnipresent agency of a vigilant and unwearying providence.—*Guernsey Star, Feb.* 11, *in a Notice of the Naturalist for January*, 1839.

Geological Glossary.—I have read with much interest several of the geological works recommended in the pages of *The Naturalist.* Still I am but a "tyro" in this instructive branch of Natural History; and find especial difficulty as regards the *technical terms*, which are too often employed by scientific men without the least explanation. If you can inform me how or where I can obtain this information, it will be a great assistance to myself, and, I doubt not, also to many of your other readers. I consider it a merit to use as few *peculiar* terms as possible; and where absolutely necessary, surely it would be no mighty addition to the author's labours to supply a glossary of terms at the end of the book.—Charles Liverpool, M.D., *Plymouth, Feb.* 4, 1839.—[Will any correspondent furnish us with such a glossary, for *The Naturalist?*—Ed.]

W. Howitt.

Drawn from life on Stone by Weld Taylor

Lith.r for Neville Woods, Naturalist

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THE NATURALIST.

VOL. IV., NO. XXXI.—APRIL, 1839.

ORNITHOLOGICAL SELECTIONS AND CRITICISMS.

By William Leslie Russell, Esq.

I have noticed with pleasure, Mr. Editor, the manner in which you encourage all, even the least experienced, of your readers, to note down observations in the fields. Perhaps the following selections from various writers, with occasional remarks of my own, may interest some of your subscribers. If so, I shall be very happy to continue them; and trust that other abler naturalists may be induced to adopt a similar plan in your pages. The undertaking involves no great expense of time or labour, and requires but little learning or ability. Premising that you are at liberty to make any alterations you may think fit, I proceed with my task, and hope to receive the free but candid corrections of your more erudite correspondents should I fall into error on any point.

In the *Magazine of Natural History*, Vol. I., p. 496, a correspondent justly comments on the query of "J. R." (Mr. Rennie?), whether the Robin Redbreast would incubate eggs not her own. "J. R." ought to have known, says "M.," that though Redbreasts, as well as other birds, will forsake their eggs and nests, if disturbed in the early part of the season, or while they are laying, they seldom do so after they have begun to sit. Another writer observes that he was in the habit of taking a Redbreast from its nest in his hand, and showing it to visitors, and that it did not desert. In addition to this I have to state that I have frequently caught Redbreasts on their eggs *after they have begun to sit*, without their deserting. I have likewise taken that notoriously timid bird, the lovely Kingfisher, in the same manner, and with a similar result.

In the *Linnæan Transactions*, Vol. XV., it is recorded, on the authority of Mr. Scales, of Beechamwell, that the Stock Dove (*Columba œnas*) breeds on the warren, in the old Rabbit-burrows. He describes the eggs as being much rounder, and smaller, than those of the Ring Dove. When the warreners find the young in a burrow, they fix sticks at the mouth of the hole in such a manner as to prevent the escape of the young, but to allow the old birds to feed them; and

when they are in good condition, they are taken for the table. This bird is now rarely seen in Suffolk; formerly it used to visit that county in prodigious flocks during the Winter season, feeding on the Buck-wheat stubbles. Mr. LEATHES says that it breeds in the old trees near the Decoy at Herringfleet. Mr. SALMON, in *The Naturalist*, Vol. II., p. 107, confirms the fact that this bird breeds both at the tops of trees and in Rabbit-burrows, but chiefly in the latter.

To capture the young Ring Doves, I have known another mode adopted in some parts of the country, viz., that of tying the unfledged birds by one leg to the nest. Hundreds and thousands are taken in this manner, and no doubt form many an excellent pie for the labouring classes. They may be purchased for a trifle of the urchins who catch them. This branch of business makes sad havoc with the numbers of these birds; but they seem to get reinforcements in this neighbourhood in Winter from other districts. At that period they roost at night in immense "masses," separating in the day time into several smaller flocks, and traversing the country in all directions in quest of food. On the first signs of open weather they entirely disperse, and begin to "bill and coo;" and I must confess, that from February to September I would willingly hear a little more of that delightful though melancholy "murmuring" music in the shady groves, than at present falls to our lot. Some persons dislike the sound. Surely such men have no "Poetry in their souls!" To be candid, however, one must own that it is a sad disappointment, and a little breaks in upon the elysian dreams of the cooing of Turtle Doves, to approach too close while the "bird of the forest" is moaning forth his love. The strains then appear rough and hoarse to a degree which one would otherwise scarce have credited. The cooing never again has the same magic power over one's feelings, although it may frequently be heard under the most favourable circumstances. Yet with me the music will ever be associated with the earliest and most delightful remembrance of the beautifully clear and pebbly stream—unknown to fame—where, in the thick shade of trees of every varied shape and aspect, the tender accents first fell upon my enchanted senses. If not "philosophic naturalists," children are at least real lovers of Nature—they seem to drink in with their entire attention the charms of rural life, in its ever-varying features, and never-ending wonders.

I remember reading somewhere an account of a Fieldfare which, being closely pursued by a Hawk, flew for protection against Mr. METCALF, keeper to Lord LOWTHER. I copy from my "common-place book" as follows:—"He [the keeper] fired at the Hawk with the first barrel (while the Fieldfare sat still), but missed; the Hawk, intent upon his prey, disregarded the shot; with the second barrel he brought the bird down. The Fieldfare left his shoulder, and fluttered for a short time around its fallen and dead enemy, uttering a chirp of joy, and then winged away from its friend and unexpected protector." Thus far the

Westmoreland Gazette. One of Mr. Loudon's correspondents, commenting on the circumstance, asks,—"Were the illustrious author of *Zoonomia* (Dr. Darwin) alive, what inference would he deduce from a fact such as this? Must we not allow something more than *instinct* to account for it?" I can well believe the truth of the above narration, having frequently heard of Pigeons and other birds flying through panes of glass and into rooms containing several persons, in order to escape from their merciless Accipitrine pursuers. One would think it were little better than passing from Scylla to Charybdis, or out of the frying-pan into the fire. But generous minds will in most cases enlist their sympathies on the side of persecuted innocence and helplessness, and hence the *reasonableness* of birds thus hunted. Whether the poor Pigeon or Fieldfare has a distinct idea that the Hawk will not venture into a dwelling-house, or near a "lord of the creation," or not, I must leave your metaphysical and phrenological readers to determine.

In a letter received from Mr. Neville Wood some time since, that gentleman stated that "An accidental variety of the tame Duck, with feet webbed, and with a shortened upper mandible, is in the possession of the Zoological Society. These birds are supposed to be hybrids between *Gallus domesticus* and *Anas boschas*. Their internal structure exactly resembles that of the latter." The cross between birds so extremely dissimilar as the Fowl and the Duck, and belonging, according to all systematists, to distinct orders, is very remarkable. What can Mr. Blyth make of this circumstance?

M. Montbeillard, the learned coadjutor of Buffon, informs us that about the end of April a female Canary-bird having laid an egg, it was taken away, and when replaced, three or four days afterwards, she devoured it. In two days more she laid another and sat on it, when two Chaffinch's eggs were put under her, and she continued to sit, though she had broken her own. At the end of ten days the Chaffinch's eggs were removed, and two newly-hatched Yellow Buntings were given her, which she reared very well. Afterwards she laid two eggs, of which she devoured one; and on the other being taken away, she continued to brood as if she had had eggs, when a Redbreast's was given her, which she successfully hatched. Another hen Canary, having laid three eggs, broke them almost immediately; and substituting two eggs of another bird, she sat upon them, and also on three others which she afterwards laid. After this the same bird laid another egg, to which was added one of the Nuthatch, and then two others, with likewise a Linnet's nest. She sat on all the eggs seven days; but preferring those of the strangers, she drew out her own successively on the three following days, with that of the Nuthatch, but hatched that of the Chaffinch. On the 15th of June a Cuckoo's egg was placed under another Canary, along with three of her own; but she successively devoured all these—the Cuckoo's the last.

These facts are very remarkable, since they prove that while the birds had a

distinct perception of the difference between their own eggs and those of other birds, the *former* in all the cases recorded were *first* rejected. Wild birds will frequently hatch "strange" eggs, in addition to their own, and appear to take no notice of the intruders. At all events I am not aware of their ever being excluded.*

Caged birds often play strange freaks. Those that are naturally unsteady sitters, and, I suppose, "deficient in the organ of Philoprogenitiveness," have a sad trick of breaking their eggs, which, once tasted, prove a great temptation in future. Fowls, and, yet more, Ducks, eat every particle, including the shell, at least in the case of fresh eggs. Now the shells generally disappear as soon as the young birds are hatched. Query, are they devoured by the parent, or carried off to a distance? I have known Ducks scatter and disperse all their eggs on the thirtieth day of incubation, when the young birds were thrusting their little bills through the shells. Such birds are either unsteady sitters, or else too close attendance has affected them with a kind of monomania, or "temporary insanity." Hens not unfrequently "cluck" when they have but a very remote intention of "sitting;" and nothing can be more injudicious, or more likely to disgust them of the whole concern, than giving them a nest of eggs before they have fully "made up their minds" as to which course they shall pursue. The best test is the usual "nest egg." Canaries are commonly so careless of their eggs—especially if they are the first produce—that they will lay them on the bare ground. This even occasionally happens to wild birds, from various causes.

Mr. Patrick Syme, of Edinburgh, who many years ago published a *Treatise on British Song Birds*, thinks that the Canary might be naturalised in our climate, having seen a pair flying about at liberty, probably an experiment to ascertain if they would breed; and he believes they had built a nest, from their being repeatedly observed flying in and out at one spot, on the precipitous bank of St. Bernard's Well, near Edinburgh. I have myself known a Canary live several months at liberty in Summer, with the misfortune, too, of having one of its legs much injured. What became of it at length, is unknown to me.

According to that ingenious naturalist, Buffon, the name "Petrel" is derived from the habit this bird has of keeping its wings sufficiently in motion to prevent its feet from sinking, whilst feeding on fat and other greasy substances which may happen to be thrown from ships, thus appearing to walk on the water, in which it resembles the apostle Peter, who also walked on the water. "Mother Carey's Chickens" is likewise a well-known name for this bird among sailors.

The Editor of the late Col. Montagu's justly celebrated *Ornithological Dic-*

* For experiments touching this point, I refer the reader to the Editor's elegant *British Song Birds*.

tionary, says,—" The assertion of ARISTOTLE, that the Cuckoo sometimes builds among broken rocks and on high mountains, and a similar remark quoted from NIPHUS, by GESNER, are no more to be trusted than his story of the Redbreast being annually changed into a Redstart; or of the Cuckoo itself being nothing but a metamorphosed Sparrow Hawk, while, immediately after this change, it is so weak, that the Kite is obliging enough to carry it on its back!!! So grossly are the commonest facts misrepresented, when not observed with scrupulous accuracy!" Singularly enough, moreover, even in modern times, the nest of the Nightjar has been more than once mistaken for that of the Cuckoo, which latter bird, it is well known, builds no nest at all.

But my paper fails me, and I must resume my notes, if agreeable to your readers, at a future opportunity.

Canterbury, *Feb.* 10, 1839.

A GLANCE AT THE HABITS OF THE *ADEPHAGA*.*

By PETER RYLANDS, ESQ.

ALTHOUGH the insect kingdom attracts a tolerable degree of *passing* notice and admiration from the lords of the creation, Entomology must be ranked amongst the most unpopular sciences. Man suffers himself to be biassed greatly by impressions alike destitute of reason and propriety. He cannot free himself from the feeling of contempt for *little* objects, and consequently despises a study having reference chiefly to minute animals.†—Astronomy, which fills the mind with vast ideas of the extent of the universe,—peoples the space above us with innumerable suns having distinct planetary systems—with

" Worlds on worlds in phalanx deep;"—

and gives existence to amazing notions of distance, extent, and greatness,—appeals strongly to the wonder of the ignorant, gratifies exceedingly open-mouthed audiences of aspirants to wisdom, and consequently becomes a popular study,

* Intended as a continuation to the paper on the Classification of the *Adephaga* which appeared in November (*Naturalist*, IV., 73).

† " To the eye of the naturalist," says LATREILLE, " the mass or volume of an object is of little consequence. The wisdom of the CREATOR never appears more conspicuous than in the structure of those minute beings which seem to conceal themselves from observation; and Almighty Power is never more strikingly exhibited than in the concentration of organs in such an atom. In giving life to this atom, and constructing, in dimensions so minute, so many organs susceptible of different sensations, my admiration of the Supreme Intelligence is much more heightened than by the contemplation of the structure of the most gigantic animals."

and its professor, though he may have learnt his task like a Parrot, and be incapable of original investigation, is set down as a philosopher of no ordinary profundity. Other sciences attain a like eminence from gratifying the *cui-bono* principle of human nature. Man's Acquisitiveness is powerful, and a science will by many be considered attractive, instructive, and *sublime*, just in proportion as it leads to the produce of wealth, and assists οἱ πολλοὶ in their soul-absorbing efforts to make "a farthing into a penny,"—and who (to use the expression of an eminent botanical friend) "are probably impenetrable to any argument which would shew utility to be not always lucrative."

I do not wish by the above remarks to depreciate Astronomy—a truly delightful science—but I *do* wish to depreciate that unreasonable prejudice which would exclude from the halls of philosophy the study of organic nature,—a prejudice not confined to the mean in station or low in intellect, but which biasses the minds of many who have credit in the world for superior wisdom, and of many more whose rank is amply sufficient to attract the gaze, and excite the admiration of the clownish multitude! The time, however, will I trust arrive when the motto so well prefixed to *The Naturalist* will be generally and *practically* admitted, that "Nothing can be unworthy of being investigated by Man which has been thought worthy of being created by God." I agree with Messrs. Lees and Pigott in believing that the study of Natural History will best be advanced in popular favour and attention by such works as those of White, Knapp, Waterton, Mudie, and our worthy Editor. And this desirable object will best be *impeded* by introductory treatises on the sciences being loaded with circles within circles, dry uninteresting details, fancied affinities, and forced analogies.

Neglected as insects are generally, *Coleoptera* meet with a double share of apathy,—"the poor Beetle that we tread upon" must humbly yield its claims for notice and admiration to the

> "Minions of Nature!—Creatures of the skies!
> Ye bright-wing'd flutterers! Sun-born Butterflies!
> Ye living gems! Ye fairy-formed things!
> Peerless in beauty!"

And yet Beetles possess many points of interest,—in some respects even excelling the other orders. Their structure is more perfect and complex,—and their habits are more diversified and peculiar. Is brilliancy of colour considered a recommendation? "An eye accustomed to the brilliant shades of green and purple that adorn many of the *Buprestidæ*,—the blue and coppery hues of *Eumolpi*,—the varied delineation of the *Cetoniidæ*,—and the warm but delicate tinting of the *Cerambycidæ*,— will not frequently find other natural productions on which it can repose with greater pleasure."* Indeed many of the elytra of these interesting beings might be described in the words of the poet—

* Jard. *Nat. Lib.*, *Ent.*, II., pp. 87—8.

"As if inlaid
With brilliants from the mine, or made
Of rainbows."

Are forms wonderful and peculiar considered worthy of investigation?—

"Their shape would make them, had they bulk and size,
More hideous foes than fancy can devise;—
With helmet-heads, and dragon-scales adorned
The mighty myriads, now securely scorned,
Would mock the majesty of Man's high birth,
Despise his bulwarks, and unpeople earth."

It will be the object of this paper to take a brief glance at the habits, &c., of the species contained in the first section of *Coleoptera—Adephaga*—a few observations on the classification of which appeared in the November number of *The Naturalist* (p. 73).

I.—*Transformations*, *Food*, &c.—The tribe *Carabacea*, R., is a very extensive group, comprising as it does according to DEJEAN's enumeration, 2,500 species, of which at least 450 occur in Britain. With few exceptions these Beetles (and the remark applies generally to the other *Coleoptera*) remain a considerable length of time in the larva state, during which period they change their skin several times. In this stage they are provided with six legs; the body linear-elongate; the head large, armed with sharp hooked mandibles, and having the rudimental eyes equal.* Their food principally consists of vegetable-feeding larvæ, which they hunt and devour with avidity. The grub of *Calosoma sycophanta* even ascends trees in quest of its prey, and RÉAUMUR relates that it often intrudes in the nests of the social caterpillars of *Bombyx processionea*, on which it makes so hearty a meal as to render itself incapable of motion, and "almost ready to burst."† In this defenceless state it is attacked and devoured by its more active brethren, apparently in preference to their natural food! When transformed into *nymphæ*,‡ *Carabacea* remain motionless, taking no nourishment—the antennæ, legs, &c., being enclosed in separate sheaths, and the whole protected by a membranous covering, through which the form of the insect may generally be distinguished. The parts having attained a proper consistence, the Beetle has sufficient strength to break its shell, and commences its career of destruction and warfare.

* The number of eyes possessed by Carabaceous larvæ is various. They generally have, I believe, six on each side, but so few comparatively have been investigated, that it would be wrong to speak positively. *Cicindelidæ* have three on each side of the head, and M. DESMAREST has described a larva of *Omophron* having only two eyes.

† KIRBY and SPENCE, *Introd.*, I., p. 269.

‡ This term was first used by ARISTOTLE, and is synonymous with the "*incomplete* pupæ" of LINNÆUS, which latter term has been adopted by many modern naturalists.

II.—*Internal structure.*—Under this head it will only be necessary to notice a few points. The length of the digestive tube does not exceed twice the length of their body. The œsophagus is short, and is followed by a membrano-muscular crop, very well developed and extremely dilatable. This is succeeded by a gizzard, oval or rounded, with cellular and elastic parietes, armed internally with mobile corneous pieces, proper for trituration, and provided with a valvule at its two orifices. The hepatic vessels, four in number, are inserted near the pylorus. Respiration is performed through *stigmata*, or bivalve apertures, and *tracheæ* altogether tubular. The nervous system does not differ from that of *Coleoptera* in general.*

III.—*Means of defence.*—These are furnished chiefly by their mandibles, by which, however, the *Carabacea* are unable to injure, except very trivially, Man or the larger animals. They are also provided with a secretion of a far from agreeable odour, which they exhale when handled; and some of the larger species are able to discharge from the abdomen, to a considerable distance, an acrid and disgusting liquor that occasions much pain if brought in contact with the eyes or the lips.† It is a similar liquid, though of a more volatile nature, which causes the peculiar explosion that the species of *Brachinus* have been so long famed for. Mr. Kirby graphically describes the effects of this explosive property:—"The most common species (*B. crepitans*)," he remarks, "which is found occasionally in many parts of Britain, when pursued by its great enemy, *Calosoma inquisitor*, F., seems at first to have no mode of escape; when suddenly a loud explosion is heard, and a blue smoke, attended by a very disagreeable scent, is seen to proceed from its anus, which immediately stops the progress of its assailant; when it has recovered from the effect of it, and the pursuit is renewed, a second discharge again arrests its course. The bombardier can fire its artillery twenty times in succession if necessary, and so gain time to effect its escape."‡ The odour of the "blue smoke" is thought by M. Dufour to have a striking analogy to that exhaled by nitric acid. The vapour is caustic, reddening blue (Mr. Kirby says white) paper, and when applied to the skin producing a sensation of burning, accompanied with red spots, which pass into brown, and, though washed, remain several days. § In the third volume of the *Entomological Magazine*, a correspondent states, that a specimen of *Brachinus Græcus* on immersion in boiling water let off one of its explosions, which caused the water to effervesce similarly to a Seidlitz powder. The explosions may be produced for some time after the death of the insect by pressing the abdomen near the

* Dufour in *Annal. des Scienc. Natur.*, VIII., p. 36.

† De Geer, IV., p. 86; Dufour, *Recher. Anatom.*, p. 204.

‡ Kirby and Spence, *Introd. to Ent.*, II., p. 246.

§ *Annales du Mus.*, XVIII., p. 70.

anus.* This peculiar property appears only to be possessed by the species o *Brachinus*, and *Anchomenus prasinus*, a small Beetle common in Britain and most other parts of Europe. It is, however, well worthy of observation that the latter insect is not generally found in possession of this explosive power. After many experiments on numerous individuals, I have been unable to detect its existence in British specimens; M. Latreille was similarly disappointed in his investigation of those of France; nor was Bonelli more fortunate in discovering this property amongst the *Anchomeni* of Italy. It appears to be confined to those of Switzerland, in which country Clairville states that "*Harpalus* (*Anchomenus*) *prasinus* combats its enemies by the same means as *Brachinus crepitans*." Latreille also bears testimony to this fact.†

IV.—*Benefit derived by Man from Carabacea.*—These are principally indirect. Being in most cases decidedly carnivorous, this tribe keep within bounds the herbivorous families, as it is a well-ascertained fact that the food of predaceous insects consists chiefly of vegetable-feeders, although instances have often occurred in which weaker carnivorous species have been devoured by the stronger. In some cases even individuals of the *same species* are thus destroyed by their more powerful brethren, but this rarely takes place except where scarcity of food renders it absolutely necessary. The *direct* benefits derived from this tribe are few. Some of the species were, I believe, in "olden times" considered as specifics for various diseases; Olivier relates, that in Senegal *Chlœnius saponaceus* is added by the natives in making a sort of soap. *Cicindela curvata*, a Mexican species, is also used, according to M. Chevrolat, by the natives, who by macerating it in water or spirits-of-wine prepare a medicinal liquid.‡

(To be continued.)

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 302.)

Bromus.—Βρωμος, from βρωσκω to eat.

Bromus diandrus, Upright Annual Brome-grass, Wall Brome-grass.—By accurate experiments it appears that this Grass will bear cutting three or four

* Holme, *Trans. Ent. Soc.*, II., p. 7.

† Griffith's *Cuv.*, *Insecta*, I., pp. 266—7.

‡ Silberm., *Rev. Ent.*, No. VI.; Westw., *Introd.*, i., p. 54.

times in the course of a season, which should be done before the flowering heads prevail, they being harsh and unfit for fodder. The blade is extremely tender, its taste sweetish and somewhat aromatic.

Bromus erectus, Upright Perennial Brome-grass.—Mr. SINCLAIR suspects it may possibly be useful on Chalky soils, but admits that it is little adapted for the best pasture land. He states that Pheasants appear very fond of the seeds; which, however, are produced but sparingly.

Bromus mollis, Soft Brome-grass, Lob-grass, or Oat-grass.—Mr. SWAYNE says this Grass is disliked by farmers, as being in corn-fields a troublesome weed, and in pastures and mowing grounds of little value, since it has generally shed its seed by the time of mowing, and produces very few root-leaves. Mr. SALISBURY adduces the awn of this Grass (though not peculiar to it) as an instance of the wonderful mechanism by which Nature enables the seed to make its way into the ground when the land is so thickly covered with other herbage, that all the art of Man would fail to effect such a purpose. By the susceptibility of the awns to atmospherical changes, curling up in dry weather and relaxing with moisture, a continued motion is occasioned, which empowers the seed to penetrate through the foliage to the soil, and therein by the same process speedily to bury itself.

Bryonia.—Βρυωνια, from βρυω to abound; or, according to HOOKER, from βρυω, to shoot or grow rapidly, in allusion to the quick growth of the stems.

Bryonia dioica, Red-berried Bryony, Wild Vine.—The active virtues of this plant seem to give it a claim to more attention than is now bestowed upon it. The root is sometimes formed into the human figure (by the continued application of a mould, while the plant is yet growing), and sold for the real Mandrake (*Atropa mandragora*) of warmer climes, with the advantage of at least equal efficacy for all desirable purposes, and without risk of incurring the "fatal Mandrake's groan."

Buffonia.—Name given by SAUVAGES in honor of the celebrated BUFFON, who had indeed very slender pretensions to botanical honor; a circumstance supposed to have been indicated by LINNÆUS in the specific name *tenuifolia*.

Bunium.—Named from βουνος, a hill, so called from the tuberosity of its root.

Bunium flexuosum, Common Earth-nut, Kipper-, Pig-, Hawk-, or Jur-nut, Lesser Pig-nut.—The roots, eaten either raw, boiled, or roasted, are little inferior to chesnuts, and would be an agreeable addition to our Winter desserts. In Sweden they constitute an article of trade. The vulgar name is derived from the resemblance of the roots to nut kernels, and the food they furnish Pigs. It is to procure the Pig-nuts that Swine root the earth up in meadows. RAY mentions as a fact he had himself observed, that when there are no stalks or leaves left to indicate the place where they grow, and they occur only here and there, still those animals, by their scent, easily find them out, and root only in the right

places—a singular and instructive example of the instinct with which the Creator has provided animals, in order to supply their wants.

Bupleurum.—Named from βους, an ox, and πλευρον, a rib, in allusion to the ribbed leaves of some species.

Butomus.—Βετομος, from βε, greatly, and τερνω to cut, so named from the sword-like shape of the leaves.

Butomus umbellatus, Flowering-rush, Water Gladiole.—It is an ornament to the banks of our rivers and marshy ditches, and may be readily propagated in small ponds, or basins of pleasure-grounds—

> "Her rosy umbels rears the Flowering Rush,
> While with reflected charms the waters blush."

Buxus.—From πυκαζω to become hard; or perhaps altered from Πυξος, the Greek name for the tree.

Buxus sempervirens, Box-tree.—The Box-tree is often used (with other evergreens) for the internal decoration of churches at Christmas; and the custom still prevails at Oxford of decorating the interior of the churches with sprigs of this shrub at Easter. Wordsworth relates, that in the North of England it is customary at funerals to provide sprigs of Box, which are thrown by each of the attendant mourners into the grave of the deceased. The Box bears chipping remarkably well, and on that account it is a favourite for hedges and formal figures. A dwarf variety is universally cultivated for borders to flower-beds. There is no wood, perhaps, equal to it for wood engravings, which, since the modern improvements in the art, and the plan of cutting on the end of the block instead of the lengthway of the grain, is the most important purpose to which it is applied. Isolated Box-trees may be occasionally observed fifteen or twenty feet high, and as many inches in girt. Single trees of such dimensions may be seen in different parts of England.

Coggeshall, Essex,
Feb. 12, 1839.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part XXII.

By Neville Wood, Esq.

(Continued from p. 300.)

Part XXII.—We have now arrived at the last part of this magnificent undertaking, published on the first of August, 1837. It contains nearly thirty plates

—instead of, as usual, twenty—with indices, list of subscribers, preface, &c. Of these latter we shall speak after supplying our customary analysis of the letter-press. First, then, we find the—

Imperial Eagle, *Aquila imperialis*,—Aigle impérial, *Fr.*—Königs Adler, *G.*—An adult and a young bird are figured, one-third of the natural size. Abundant in, but confined to, the Eastern portions of the European Continent, building either in the mountain forests or on high rocks, laying two or three eggs of a dull white. The adults have the scapularies entirely white, a character which at once distinguishes this species from the Golden Eagle.

Pallid Harrier, *Circus pallidus*, Sykes.—This species, recently introduced into the European fauna, is probably common in Spain and North Africa. One individual has been killed on the banks of the Rhine. The figure is of the natural dimensions. Until 1832 this bird was confounded with *Circus cyaneus*, from which, however, the male of the former species differs in several particulars, among which it may be mentioned that the bars of the under tail are seven instead of four. The female resembles the female of *C. cyaneus*, but the bars are six instead of four. I frequents plains, and never perches on trees.

Lesbian Bunting, *Emberiza Lesbia*,—Bruant mitilène, *Fr.*—The plate contains a pair of these pretty birds, figured in an admirable manner. Sparingly inhabits the Eastern parts of Southern Europe; occurs, but rarely, in Italy, Provence, Greece, Japan, &c. The spots on the breast are more numerous in the female than in the male, but the general similarity of the sexes accords with the uniform plumage observed in the rest of the genus.

Yellow Warbler, *Sylvia icterina*,—Becfin ictérine, *Fr.*—An adult is figured in the plate. Occurs in Holland, the Roman States, France, &c., and may perhaps be more abundant and more widely distributed than is at present suspected. The length and forked shape of the tail, and the length of the tarsi, as compared with *S. trochilus* and *S. rufa*, induce the Continental naturalists to consider it a distinct species. It is only further known that it feeds on insects, but we have no doubt whatever that its habits closely resemble those of our British *Sylviæ*.

Velvet Scoter, *Oidemia fusca*,—Grande Macreuse, *Fr.*—Rustfarbige Ente, *G.*—A male is finely represented, natural size. Common in the Northern regions of Europe, Asia, and America, as well as on the Northern coasts of Britain, passing the Summer within the Arctic Circle, and migrating Southwards in Winter. Feed on molluscs, which it obtains by diving. It breeds inland, making a nest of Grass, lined with down, in which it lays eight or ten white eggs. It is readily distinguished from its congeners by the white mark across the wing, and the white patch behind the eye. The sexes differ considerably, the female closely resembling the Surf Scoter.

Red-throated Pipit, *Anthus rufogularis*,—Pipit à-gorge-rouge, *Fr.*—A male and female occupy the plate, "drawn from Nature," but, although destitute of any glaring fault, evidently not from life. Inhabits India and Africa, and has been met with in Sicily. The upper parts of the adult female are much lighter than those of the male; young birds resemble the adult male, but have the light margins of the upper surface less extensive. This species is distinguished from the rest of its congeners by the rufous tint of its throat.

Brunnich's Guillemot, *Uria Brunnichii*,—Guillemot à-gros-bec, *Fr.*—The figure is of the natural size, and in the supposed Summer plumage, which resembles that of the Common Guillemot, except that the dark parts are more intense in colour. It is distinguished from *U. troile* by the stout and abbreviated form of its bill. It abounds in Greenland, Spitzbergen, Davis's Straits, and Baffin's Bay. Mr. Gould also believes that it must occur in Scandinavia and on the Northern shores of Britain.

Keptuschka Lapwing, *Vanellus Keptuschka*,—Vanneau Keptuschka, *Fr.*—Two figures are given, of the living size, representing an adult male and a young bird, forwarded respectively by Professor Lichtenstein and Keith Abbott, Esq. M. Lichtenstein and Dr. Wagler consider this bird and *V. gregarius* to be identical. Inhabits the East of Europe, the marshes of Siberia, and is common in Persia and Asia-Minor. Young birds want the rich chesnut on the flanks of the adult, the black on the crown of the head, &c.

Eastern Toadeater, *Bubo Ascalaphus*,—Hibou Ascalaphus, *Fr.*—An adult male is figured, nearly the natural size, and finely executed. Inhabits the temperate regions of Asia and Africa, and has been observed in Sicily and Sardinia. Mr. Gould believes *B. Bengalensis* of his *Century of Birds* to be identical with the present species.

Dusky Shearwater, *Puffinus obscurus*,—Pétrel obscur, *Fr.*—An adult, natural size, figures in the plate. Inhabits the Southern seas, being seldom seen further North than the Mediterranean. More abundant on the African shores, which may be considered its true habitat. There are no seasonal or sexual changes of plumage to be recorded. This bird so closely resembles *P. Anglorum*, that, were it not for its inferior size, the distinctions between the species would scarcely be recognised.

Black-winged Xeme, *Xema atricilla*,—Mouette à-ailes-noires, *Fr.*—An adult, natural dimensions, is very well figured. Common in the United States of America; but although a few specimens have been met with in Europe, it is not *Larus atricilla* of Temminck. We believe the only known appearance of the Black-winged Xeme in Europe is that recorded by Montagu, who saw seven individuals in the South of England, and states that it may easily be known from the Black-headed Gull even when flying. "The bird," he observes, "appears

much larger and the tail shorter in proportion." Resembles its congeners in habits, subsisting on almost any kind of animal matter thrown up by the tide, and frequents marshes and ploughed fields in search of Worms and Slugs. "It usually breeds in the marshes near the coast, and lays three eggs, of a dull clay colour, thinly marked with irregular patches of pale purplish brown."

Semipalmated Sandpiper, *Totanus semipalmatus*,—Chevalier semipalmé, *Fr.*—Two birds are well figured, of the natural size, one in Summer the other in Winter plumage. America is the true habitat of this bird, but a few specimens have been met with in the North of Europe. Seeks its food—shell-fish, Worms, and aquatic insects—on the muddy shores and flats at low water. In the Summer plumage the upper parts are olive-brown, the under white; in the Winter attire the whole plumage is light-brown, barred with black. This bird is familiarly known in America as the Willet, and for an interesting account of its habits we refer our readers to Alexander Wilson.

Snow Goose, *Anser hyperboreus*,—Oie hyperborée, *Fr.*—Schnee Gans, *G.*—An adult is figured, one-third less than the natural size. The snowy plumage is delicately executed. Inhabits the Arctic Circle, but especially those portions belonging to America. In the Antarctic Circle its place is supplied by another species. From the North of Europe and Lapland it regularly migrates to the East of Europe, but the Polar regions form its true habitat. "It retires to those remote parts early in Spring, to perform the duties of incubating and rearing its young." "The eggs are of a yellowish white, of a regular ovate form, and somewhat larger than those of the Eider Duck." Feeds on insects and the roots of plants, which latter it grubs up from the marshes like Swine, and for which operation its strong serrated bill is of course admirably adapted. In Autumn it subsists on berries, especially those of *Empetrum nigrum*. The sexes are similar. The whole plumage is almost pure white, but the wing primaries are black, the bill is orange colour, the parts of the head immediately surrounding it being tinted with a lighter hue of the same colour, and appearing as if the colour of the bill had been artificially shaded off on all sides. The late Dr. Latham informs us that this bird is common at Hudson's Bay; that it visits the Severn River in May, and after having proceeded further North to breed, returns to Severn Fort in the beginning of September, and remains to the middle of October, when they depart Southward with their young, in flocks innumerable. At this time many thousands are killed by the inhabitants, who pluck them, and, taking out the entrails, put their bodies in holes dug in the ground, covering them with earth, which, freezing above, keeps them perfectly sweet throughout the severe season.

Creeping Locustell, *Locustella certhiola*,—Becfin trapu, *Fr.*—Two figures are executed in a manner every way worthy of the *Birds of Europe*. Inhabits

the South of Europe, where it appears to be rare. It may be distinguished from its congeners by its superior size, and the greyish-white termination of its tail feathers. Mr. Gould has received the original specimen described and mounted by Pallas, from Prof. Lichtenstein, of Berlin.

Bridled Guillemot, *Uria lacrymans*,—Guillemot bridé, *Fr.*—The figure, natural size, is good. From the similarity of their numbers, habits and haunts, our author questions the specific distinctness of *U. troile* and *U. lacrymans*, the latter, moreover, only differing in the white mark from which it obtains its name. It is considered distinct by Continental naturalists, and was first described as such by Choris, who states that it is common at Spitzbergen, &c.

Rosy Trascel, *Erythrospiza rosea*,—Bouvreuil Pallas, *Fr.*—The figure of this beautiful bird is truly lovely, and deserves all praise. Inhabits the Northern regions of the Old World, and the centre of Europe, where, however, it is rare. Though considered by Wilson as identical with *Fringilla purpurea*, it differs both from that species and *E. erythrina* in its longer and narrower bill. The female of this lovely bird is unknown.

Rock Pipit, *Anthus obscurus*, Blyth.—The bird is very fairly represented in the plate. Mr. Gould believes that the Continental *Anthus aquaticus* is distinct from the Rock Pipit of Britain; we have, therefore, at the suggestion of Mr. Edward Blyth, named the latter species *A. obscurus*. The British bird wants the vinous tint which pervades the breast of the foreign species. It is resident in Britain, frequenting rocky shores in Summer, and the low muddy portions of the sea-coast in Winter. Feeds on marine Worms and insects, which it seizes with great agility. Distinguished from the Meadow Pipit by its superior size and dusky colour. Breeds early, placing its nest in the clefts of rocks, and constructing it of marine Grasses, lined with hair, &c. Lays four or five light yellowish-grey eggs, spotted with reddish-brown, either all over or only at the larger end.

White Crane, *Grus leucogeranus*,—Grue leucogerane, *Fr.*—A fine figure is supplied, one-third of the natural size. This bird is a very recent accession to the European fauna, and has only been observed in the most Easterly portions of the Continent. It is common in Japan, its native habitat being the North and middle of Asia. Subsists on reptiles, the fry of fishes, crustacea, and bulbous roots. The plumage of this bird is pure white.

Schinz's Tringa, *Tringa Schinzii*, Bonap.—The figures are of the natural size, but assuredly not in natural attitudes. This bird is introduced into the European and British fauna on the strength of an accidental straggler having been killed, a few years ago, in Shropshire, and sent to Mr. Gould by Sir Rowland Hill, Bart. Its true habitat is America. Its shorter bill and white

rump distinguish it from its congeners. Mr. Gould believes *M. Brehm's T. Schinzii* to be identical with *T. variabilis*. It is by no means shy, and associates in the Winter either with birds of its own kind or with other Tringas, but they become more restless in Winter. Frequents marshy shores, and the borders of brackish waters, near which it breeds, laying four yellowish-grey eggs spotted with olive or chesnut brown.

Spur-winged Pluvian, *Pluvianus spinosus*,—Pluvier armé, *Fr.*—The plate represents an adult male, a singular-looking creature, of the natural size. Inhabits nearly the whole of Africa, Anatolia, &c., and occasionally visits the South and East of Europe; it also inhabits Russia. It is very clamorous, and has a hasty and almost continual movement of the head and neck, as if it were making rapid and eager blows. The sexes are similar.

American Cuckoo, *Coccyzus Americanus*,—Coucou cendreillard, *Fr.*—This bird is well figured, of the living size. Two specimens of this American species have been shot in England, and two in Ireland; the first notice of it as a British and European bird appeared in Rennie's *Field Naturalist*. From its common cry resembling the word *cow*, it is often called the Cow-bird in America, and also Rain-crow, from being particularly vociferous before rain. It builds its own nest, and attends to its young with assiduity, but sometimes lays one of its eggs in the nests of other birds. In shape its nest is like that of a Pigeon, and it lays four or five eggs of an elongated form, and bright green colour. Only one brood is reared in a season, except, of course, in case of the destruction of the first nest. Temminck thinks this bird inhabits the North of Europe, as he has a difficulty in conceiving that it should migrate to us from America.

White-headed Elanus, *Elanus leucocephalus*,—Milan de-la-Caroline, *Fr.*—A very beautiful figure represents the bird of the natural size. One specimen has occurred in Argyleshire, and another in Yorkshire. Seizes Locusts and other insects, and feeds on them while flying, and also eats the nests of Wasps and Locusts, with their larvæ. "Snakes and Lizards are their common food in all parts of America. In October they begin slowly to migrate Southward. Its flight is extremely graceful, and it remains on the wing nearly the whole day, roosting at night on lofty trees. The nest is placed on the top of a tall Oak or Pine-tree, being formed of sticks, intermixed with Moss and Grass, lined with a few feathers. The eggs, four or six in number, are greenish-white, irregularly blotched with dark brown; when just hatched, the young are covered with white down."

Audouin's Gull, *Larus Audouinii*,—Mouette d'Audouin, *Fr.*—A male is figured in Summer plumage, and nearly of the natural dimensions. "It is probable that, independent of those of the Mediterranean, the whole of the coasts of

Northern and Southern Africa constitutes its native habitat. The situation of the nostrils in this species, together with the absence of the black head in Summer, sufficiently indicates its separation, as M. Natterer has observed, from those Gulls which we have included under the generic title of *Xema*."

Vinous Trascel, *Erythrospiza githaginea*,—Bouvreuil githagine, *Fr.*—A male is prettily figured, natural size. Inhabits North Africa, passing occasionally into the South of Europe, where it appears to be rare. Temminck represents the bill and feet as red, but in the only specimen Mr. Gould has seen they are light yellow, which he believes to be the natural colour. The female, it is said, is almost entirely destitute of the beautiful tints which adorn the male.

Bulwer's Petrel, *Thalassidroma Bulwerii*.—The figure is of the natural size. Its addition to the British fauna is owing to a specimen having been found dead, on the banks of the Ure, in Yorkshire, May 8, 1837. Inhabits Madeira and the adjacent islands; and probably the Western shores of Africa form the true habitat of this rare bird. Its cuneated tail and large size distinguish it from the rest of the genus.

Terek Godwit, *Limosa Terek*,—Barge Terek, *Fr.*—One figure is given, in Winter plumage, and of the natural size. Occurs in Borneo and Japan, and has once been killed in Normandy, which places it in the European fauna. The plumage is more mottled in Summer, especially on the upper surface. Mr. Gould believes this species to be more nearly allied to the Tringas than to the Godwits, but judiciously postpones his decision until the habits of the bird are better known.

Hybrid Grous, *Tetrao hybridus*,—Tétras Rakkelhan, *Fr.*—Bastard Waldhuhn, *G.*—This bird, specimens of which occasionally occur in the London markets, amongst the Wood Grous and Black Grous, is supposed to be a hybrid between those two species. This is the opinion of Gould, Nilsson, and Yarrell. A fine figure is given, of the natural size. Further observation will be required to settle this doubtful point.

Pectoral Tringa, *Tringa pectoralis*,—Bécasseau pectorale, *Fr.*—A sweet figure is supplied, of the living dimensions. Its true habitat is North America, but one example has occurred on the borders of an extensive sheet of water near Yarmouth, "rather celebrated," observes Mr. J. D. Hoy, "for the numerous rare birds which have at different times been shot on its banks and waters." It was a female, and solitary. "This Tringa," adds Mr. Hoy, "seems allied both to *T. variabilis* and *T. subarquata*; and in the form of the bill shows some affinity with the Knot (*T. canutus*). In size it is superior to the Curlew Tringa (*T. subarquata*)."

We have at length brought our analytical notices of this truly national work to a close. The labour required for analyzing the twenty-two Parts, containing

between four and five hundred species, has proved no light undertaking, pressed as we have frequently been with other matters. But the pleasure derived from an attentive examination of each plate, and its accompanying letter-press, has fully repaid us for all trouble, and we trust that the condensed history of European birds thus published in our Journal will be of some service to the ornithologist, especially as there is no other English work supplying information of a similar nature.

The last part contains title-pages to the five volumes, and a classified list of the birds described in the whole work, which will enable subscribers to arrange the plates in their proper order. In our next or some future number we shall possibly give a list of the birds of Europe, adopting Mr. Gould's arrangement as far as we coincide with him in views.

The list of subscribers contains a large number of the nobility and gentry, but fewer scientific men than we had expected. Men of science, we know, are often not too rich, but the names of several ornithologists not deficient in the good things of this world do not figure here. Among the individuals whose names are known to science we find the following:—Mr. Audubon; T. B. L. Baker, Esq.; Professor Bell; T. C. Eyton, Esq.; Mr. Hewitson; Sir. W. Jardine, Bart.; Rev. Leonard Jenyns; Dr. Shirley Palmer; W. H. Rudston Read, Esq.; M. Temminck; Mr. Yarrell; &c. &c.

It now only remains for us to present our best thanks to S. H. Haslam, Esq., F.L.S., of Chesham, near Manchester, for the loan of some of the early Parts of this work, and to Mr. Gould for his kindness in transmitting, expressly for our "Sketches," Parts VII. to XXII., both inclusive.

Campsall Hall, March 1, 1839.

ON THE USE AND ABUSE OF PLATES OF NATURAL OBJECTS.

By Peter Rylands, Esq.

The perusal of the politely-written critique of Mr. Lees (p. 288) convinces me that his views and my own on the subject in dispute are not very dissimilar; still, however, there are one or two points in his paper which demand a brief notice.

Mr. Lees commences by stating that my remarks (Vol. III., p. 247) "were decidedly to the effect that description was far superior to delineation; and that the former was the sole legitimate source for the student to trust to." Mr. L. has here slightly (though I am sure unintentionally) misrepresented the tenour of

my observations. In the article referred to will be found the following remark:—"*Plates may be necessary sometimes*, and the assistance of friends at the onset may be beneficial, but neither should be *depended upon* for the determination of species." The question naturally arises,—"When are plates *necessary?*" Mr. L.'s expressive language supplies the answer:—"In cases of doubt, uncertainty, or inadequate descriptions,"—"when probabilities seem nearly balanced,—when descriptions are so faulty and ambiguous that discrimination itself is bewildered,"—when, in fact, the student has carefully examined his specimen, is perfectly conversant with its structure and peculiarities, and is only *driven* to plates by the defects of his text-book. The use of plates under these circumstances can do do harm; nor in such cases could a charge of empiricism be sustained, or a habit of superficial observation cultivated. The main point in dispute is this:—Is the student most likely to be benefited by the constant determination of his specimens by a reference to plates, or to descriptions? I feel convinced that Mr. Lees will agree with me in the opinion that an accurate knowledge of the species under investigation is far more likely to be obtained by a comparison of it with descriptions than by the examination—in nine cases out of ten a superficial one—of a plate. What then should be the advice given to a student? To make a point of determining the species to which his specimens belong by examining figures of them—that being the easiest mode of obtaining the knowledge he seeks? Or should we impress upon his mind the importance of never making use of plates except when circumstances rendered it absolutely necessary? The latter will be, in my opinion, by far the best course to pursue. "I can readily conceive and understand," says Mr. Lees, "that Mr. Rylands is only anxious that the young student shall obtain the habit of examining for himself 'peculiarities of structure,' and not as a *matter of course* resort in all cases forthwith to plates. So far I admit the propriety of investigation to every inquirer." I am glad that Mr. Lees admits this, but in so doing does he not "sink *his* ensign to half-mast high?" Compare the above with the following sentence (Vol. III., p. 298), which constitutes, in my opinion, "the very point of contention." "Many naturalists seem strongly to object to the name of a species being discovered by the student in an 'easy way,' *as if a person was not more likely to pay attention to the minutiæ of an object whose name he was certain of*, rather than direct his attention to what he was entirely unacquainted with." Now if this last remark of Mr. Lees be correct, it is obvious that the student should be *recommended* to "resort in *all cases forthwith* to plates as a *matter of course*." I fear too many students do thus, as a "matter of course," obtain the names of their specimens, and in consequence know little of the subject they *appear* to study, or of the peculiarities of the objects they collect. If my remarks have the desired effect of lessening the number of these scientific "quacks," I should indeed be gratified.

I proceed to notice a remark which my admission respecting "a great portion, especially of the *smaller*, *Lepidoptera*" has given rise to. "This [the remark quoted] almost at once," says Mr. Lees, "reduces the matter into a question of relative magnitude; for if in the 'smaller' *Lepidoptera* plates are 'here necessary,' so *of course* they must be for all the 'smaller' insects, of whatever order; for surely 'intricately-blended' colours are not *entirely* confined to the smaller *Lepidoptera;* and where such blended colours appear, it is admitted that descriptive language becomes inadequate* to 'enable the student to distinguish.'" Now I demur to this "of course," and I think Mr. L. will, on consideration, see that I have "good reason to do so." A *small* Beetle, for instance, is, *ceteris paribus*, as easy of recognition (with the aid of a microscope) as a large one, since its characteristics may be such as can be accurately notified; and the probability is that such will be the fact, Beetles being in most cases *specifically* distinguished by the form, sculpture, &c., of the elytra, thorax, &c., and seldom manifesting the "intricately-blended" colours so prevalent amongst the *Lepidoptera*, and which in that order constitute the *principal* and *specific* distinctions. Nor does my remark reduce the question into one of relative magnitude, as the observation applied generally to the *Lepidoptera* whether "great or small," but more "especially" to the smaller species, the latter in many cases offering fewer *describable* characteristics than the larger species.

Mr. Lees seems to have a difficulty in understanding how plates can be "abused." But surely if their *use* be to dispel doubts and perplexity in certain cases, it is to *abuse* them if we apply to them as a "matter of course" for the names of our specimens, and, having obtained our wish, feel contented with knowing the *general outline* of the species we possess, and give ourselves no trouble at all in investigating their *minute* peculiarities.

I could make a few additional observations on other parts of Mr. L.'s article, but believing that I have said enough to place my opinion on the subject in dispute in a clear—and I hope favourable—light, I refrain; and conclude, as I commenced the discussion, with all possible good-will towards Mr. Lees, and assuring him that he has my best feelings of respect and esteem.

Bewsey House, Warrington,
Feb. 18, 1839.

[As we were desirous that if Mr. Rylands thought fit to reply at all to Mr. Lees, his rejoinder should appear as early as possible, we transmitted a proof of Mr. L.'s article to our present correspondent, which will account for the foregoing paper being dated previous to the publication of the essay on which it comments. —Ed.]

* Not in all cases. "Intricately-blended" colours may "appear," but if there exist other and important specific characters, description *will* "enable the student to distinguish" them.

A GLOSSARY OF GEOLOGICAL TERMS.*

By Gideon A. Mantell, LL.D., F.R.S.

Alluvium, water-worn materials.—*Aluminum*, metallic base of Clay.—*Amorphous*, shapeless.—*Amygdaloid*, cellular volcanic rock, the cavities of which are filled with other substances.—*Anthracite*, Stone or Cannel Coal.—*Anthracotherium*, an extinct animal, allied to *Palæotheria*, found in Anthracite.—*Augite*, a mineral found in many volcanic rocks.

Basalt, ancient lava, composed of Augite and Felspar, frequently columnar.—*Basin*, a depression of, or concavity in, strata.—*Belemnite*, the bone of an animal allied to the Cuttle-fish.—*Bitumen*, Mineral pitch or tar.—*Blende*, Sulphuret of Zinc, occurring in Primary and Secondary rocks.—*Breccia*, conglomerate of pebbles or fragmented rocks.

Calc sinter, deposition from thermal springs, charged with Carbonate of Lime.—*Calcaire grossier*, a Tertiary Limestone.—*Calcium*, metallic base of Lime.—*Carbon*, the elementary substance of Charcoal and the Diamond.—*Carbonate of Lime*, Lime and Carbonic Acid.—*Carboniferous*, belonging to Coal.—*Chalcedony*, a species of *Silex*, named from Chalcedon, a city of Asia, near which it is found in great abundance.—*Chert*, a Silicious mineral allied to Flint and Chalcedony.—*Choanite*, a zoophyte of the Chalk.—*Cirrus*, fossil shell of the Chalk.†—*Cornbrash*, a coarse shelly Limestone.—*Conchoidal*, shelly.—*Conformable*, applied to parallel strata lying upon each other.—*Conglomerate*, fragments cemented together.—*Crag*, a Tertiary deposit; from a provincial term used in Norfolk and Suffolk to denote Gravel.—*Crater*, the vent of a volcano.—*Crinoidea*, Lily-shaped animals.—*Crystals*, symmetrical forms assumed by mineral substances.—*Cyathiform*, cup-shaped.

Delta, alluvial deposits formed by rivers.—*Denudation*, strata exposed by the action of water.—*Detritus*, disintegrated materials of rocks.—*Diluvium*, a term formerly employed to designate ancient alluvial deposits.—*Dip*, the inclination of strata.—*Dyke*, an intrusion of melted matter into rents or fissures of solid rocks.

Earth's crust, that portion of the solid surface of the earth which is accessible to human observation.—*Encrinite*, a genus of *Crinoidea*.—*Eocene*, the dawn of the present epoch; the early Tertiary.—*Escarpment*, the steep cliff of a ridge of land.—*Exuviæ*, organic remains.

* From the *Wonders of Geology*. This list is not intended as a *complete* geological glossary; but it will be found to serve the general purposes of the student very well.—Ed.

† See Dr. Mantell's *Geology of the South-East of England*, p. 125.—Ed.

Fault, interruption of the continuity of strata with displacement.—*Felspar*, a mineral which enters into the composition of many Primary rocks.—*Formation*, group, series, system; terms applied to any class of rocks presumed to have been formed during one geological epoch.

Galt, a provincial term applied to the Blue Marl of the Chalk formation.—*Gneiss*, a primary rock, allied to Granite.—*Granite*, a Primary rock, composed of Mica, Quartz, and Felspar.—*Greensand* (or *Shanklin Sand*), the lowermost strata of the Chalk-formation.—*Greenstone*, a Trap rock.—*Greywacke*, a Transition rock; a conglomerate indurated by heat.—*Grit*, coarse-grained Calciferous Sandstone.—*Gypsum*, Sulphate of Lime.

Iguanodon, extinct colossal Lizard, having teeth like those of the Iguana.—*Imbricated*, laid one over the other like scales.—*Inoceramus*, a bivalve shell of the Chalk, having a fibrous structure.*

Kimmeridge Clay, a blue Clay of the Oolite.

Lacustrine, belonging to a lake.—*Lamellated*, covered with thin plates or scales.—*Laminæ*, the thin layers of which a stratum is composed.—*Laminated*, strata formed of very thin layers.—*Lapilli*, volcanic ashes, in which minute globular concretions prevail.—*Lias*, a provincial term, applied to a group of strata situated between the Oolite and the New Red Sandstone.—*Lignite*, Carbonised wood.—*Lithodomi*, *Mollusca* which perforate stone.—*Lithological*, the stony character of a mineral mass.—*Lithophytes*, stony plants; a term applied to Corals.—*Loess*, an alluvial Tertiary deposit on the banks of the Rhine.—*Lophiodon*, a fossil animal, allied to the Tapir, so named from the eminences on the teeth.

Mammillated, studded with mammillæ, or rounded protuberances.—*Marl*, a mixture of Clay and Lime.—*Marsupite*, a genus of *Crinoidea* of the Chalk.—*Matrix*, the substance in which a fossil is embedded.—*Meandrina*, a genus of Corals, with meandering cells, as the Brain-stone Coral.—*Megalosaurus*, gigantic Lizard; an extinct Saurian, allied to the Monitor.—*Megalonyx*, an extinct quadruped, allied to the Sloth.—*Meteorites*, mineral masses which fall from the atmosphere.—*Megatherium*, an extinct gigantic quadruped, allied to the Sloth.—*Mica*, a simple mineral, one of the component parts of Granite.—*Miocene*, middle Tertiary series.—*Multilocular*, many-chambered shells, as the Nautilus.—*Muschelkalk*, a Limestone of the Red-Sandstone-formation.

New Red Sandstone, a group of strata between the Magnesian Limestone and the Lias.—*Nodule*, a rounded mineral mass, as a Flint.—*Nummulite*, an internal multilocular shell.

Obsidian, a glassy lava.—*Old Red Sandstone*, a group of strata lying between

* See *Geol. of the S.-E. of England*, p. 127.—Ed.

the Carboniferous beds and the Silurian system.—*Oolite*, a Limestone group, composed of an aggregation of spheroidal grains.—*Organic remains*, the relics of animals and plants.—*Orthoceratite*, a strait, fossil multilocular shell.—*Ossicula*, small bones.

Palæotherium, an extinct quadruped, allied to the Tapir.—*Peperino*, a volcanic aggregate.—*Petroleum*, mineral oil.—*Pisolite*, minerals having a structure resembling peas agglutinated together.—*Plastic Clay*, a Tertiary deposit.—*Plesiosaurus*, an extinct marine animal, allied to the Lizard.—*Pliocene*, more recent, modern Tertiary.—*Polyparia*, Corals.—*Porphyry*, a species of ancient lava.—*Producta*, a genus of fossil bivalve marine shells, found in the lower Secondary rocks, and allied to *Terebratula*.—*Pterodactyles*, a genus of extinct winged reptiles.—*Pumice*, a light Spongy lava.—*Pyrites*, Sulphuret of Iron.

Quartz, a mineral composed of pure Silex.

Saurian, a division of the Lizard-family.—*Scaphite*, an extinct genus of *Cephalopoda*, of a boat-like form.—*Scoriæ*, volcanic cinders.—*Sedimentary*, deposited by water.—*Septaria*, nodular masses of Clay, having crevices filled with Spar.—*Shale*, Slaty Clay.—*Silex*, Flint.—*Silica*, the base of Flint.—*Silt*, fluviatile deposits of mud, &c.—*Spirifera*, an extinct genus of bivalve shells.—*Stalactite*, pendent masses of Carbonate of Lime.—*Stalagmite*, Calcareous concretions formed on the floors of caverns by the dripping from stlaactites.—*Stellular*, having star-like markings.—*Stratum*, a layer of any deposit.—*Syenite*, a species of Granite in which Hornblende supplies the place of Mica.

Tertiary, applied to formations or strata newer than the Chalk.—*Trachyte*, lava composed chiefly of Felspar.—*Trap rocks*, ancient volcanic rocks, the name of which is derived from a Swedish word, *Trappa*, a stair.—*Trilobite*, an extinct family of *Crustacea*, the body being divided into three lobes, whence the name.—*Tuff*, earthy volcanic rock.—*Tufa*, a Calcareous precipitate from water.—*Turrilite*, a spiral *multilocular* shell of the Chalk.

Unconformable, applied to strata lying in a different plane from those on which they rest.

Veins, fissures in rocks, filled up by mineral substances.

CORRESPONDENCE.

Botanical Queries.

To the Editor of The Naturalist.

Sir,—What is the real difference in Botany between *abnormal* and *aberrant*, with examples?—What are *accessory principles*, and can tabasheer, raphides, &c.,

be considered such, or must the term be given to glands, hairs, stings, &c. ?—Will botanists notice *Callitriche*, whether it be always monoicous, or whether that character depend not upon adventitious circumstances? Nees ab Esenbeck says, that in the Spring only it is monoicous, in Summer hermaphrodite.—*Zostera*, too, of what class is it?—*Cladium mariscus*, when in cultivation, I have often found with three stamens in the central florets. Who can confirm this from observation?—Ought not *Valeriana rubra* to be placed in *Monandria*, and called, as by De Candolle, *Centranthus* ?, seeing that it has always one stamen, and agrees in structure with *Centranthus calcitrapa*, which is admitted by all in the first class.—Will the botanists of our provinces give us the provincial names and superstitious legends of our native plants? Perhaps Mr. Hall will add the former to his excellent contributions; and perhaps that gentleman will also supply the derivations of these English names.—Will any one examine *Sorbus*, *Pyrus*, and *Mespilus*, with a view to better generic characters, and also to ascertaining if any or what analogy exists between the number of stigmas and the number of seeds ripened?

I remain,

Yours respectfully,

London, *Jan.* 7, 1839. E. W. S.

Notes on the Month of January, 1839.

To the Editor of the Naturalist.

Dear Sir,—Pardon my filling up my paper with a few remarks on the month of January, 1839, now expiring, after thirty-one days of most variable weather; the barometer during the time has varied much, and the thermometer ranged "far and wide," even to the extent of twenty-five degrees in the twenty-four hours. The greatest mutation appears to have been on the 29th and 30th. The frosts have been so fickle that few water birds have visited our stream (the Wyssey, a branch of the Ouse); the usual number of Wild Geese, Ducks, and Whistling Plover have been heard and seen to pass over, scarcely any alighting. One specimen of the Black Duck, or Scoter (*Anas nigra*), a rarity here, was shot and brought to me, in very fine condition, weighing 2 lbs. 10 oz. Altogether this has been an unprofitable season to the gunners.

"So oft as the Thrush shall ere Candlemas sing,
So oft ere May-morn shall she drop her wing."

Our Throstles have apparently taken the hint, or advised with Mr. Murphy, for not one has yet been heard to welcome in the new year (now the 31st). From the excellent authority of the late Robert Markham, Esq., this sweet songster is past his average time. Mr. M.'s remarks for fifty-six years give the medium

the 14th of January; earliest commencement in that long period, Dec. 4, 1735; latest, Feb. 13, 1766. The Robin has been unusually mute, possibly from the prevalence of the late high winds. The "nice, modest, crimson-tipped flower" has dared the blasts, and raised its pretty head to deck the scarce green fields; truly a "bonnie gem" in this dearth-time of vegetable beauty; for, save two or three withered flowers of last season, scarcely any are now to be found in this part of "Nature's garden;" though the golden blossoms of the Furze (*Ulex Europæus*), with its "countless spears valiantly set," look as lovely and brilliant as when the great Linnæus fell upon his knees, and thanked God that he had lived to see so beautiful a plant.

"When January spreads a pall of snow
O'er the dead face of th' undistinguish'd earth,"

fewer objects of interest present themselves to the naturalist than at any other period of the year; yet we will not

"Dispraise the pure and spotless form of the sharp time,"

for it is an enlivening healthy month; the new year has dawned; the deep sleep of stern Winter is passing away, and the early vegetable world begins to exhibit symptoms of returning life;—and who does not hail with pleasure "the firstling of the Winter year," the pale Primrose?

A Summer colony of Rooks belonging to this place, I observed, paid their first visit to their old nesting-trees on the 16th; and, whether excited to anger by the destructive effects of the gale of wind on Monday the 7th, or roused to jealousy by the intrusion of their Ash-coloured friends, the Hooded Crows, whilst "choosing their partners and places" for the Spring, they were unusually clamorous, making the noises, I believe, peculiar to this time of the year. I think these birds are the most amusing, as well as the most sagacious and useful of the feathered tribes; a few of them, at that time, diligently seeking their morning meal, with one eye upon their feculent feast, and the other upon your behaviour, will give a degree of interest to the most dreary landscape. When I see a juvenile Crow-keeper, sitting lazily in the sun, or skreening himself under a hedge from the blast, whilst the busy "nigritudes" are getting a good meal, I generally reward his neglect; a virtue and a blessing to them, equal to the most refined humanity. Two Starlings have already revisited their old nesting-nook in a wall, where I see them almost every fine day.

As you hinted at p. 215, Mr. Murphy has made another "lucky hit" at the weather,—how affecting the thermometer of his *pocket*, he best knows. Is there not something more than "luck" in this? If not, he has, as they say in Norfolk of a fortunate man, "Old Nick's share and his own!" On the morning after his coldest day, I was delighted, during a stroll over the fens, to witness the magic

works of the frost during the night. The river, a very swift stream, was covered with rough ice full one inch and a half or two inches thick, an unprecedented occurrence in so short a time. The icy fabric on some of the drains was most beautiful. One exhibiting, for about fifty yards, a smooth transparent covering, as clear as though the tutelary genius of the bogs had cast a sheet of glass over it, to protect the plants below from the intense cold; another showed a marbled pavement, beautifully veined—a fit material for a Russian Empress's Winter palace—where the water was gently rising over the already frozen surface; the new ice, shooting into every fantastic form, looked like a crystal bed, sparkling in the faint sun-beams. But the wind changed, rain followed, and the fairy fabric vanished almost as quickly as it came. Since the disappearance of that frost, I have started several species of water-insects from the pool's surface, and have caught the Plunger-beetle (*Dytiscus marginalis*), Boat-fly (*Notonecta glauca*), two kinds of Water-bugs, the latter moving on the water very sluggishly, and larva of different kinds. Can you inform me of a good work for accurate information respecting the habits and transformations of these predatory creatures? I think Buffon says they feed on mud! I have kept a variety of them, including *Hydrophilus piceus* and *Nepa cinerea*, and find they do much better on fresh-water Leeches, Water Snails, and the larva of the Dragon-fly.

My tame Turtle Doves began to coo on the 18th for the first time.

I am fully aware that these my undigested comments on the past month are not worthy of insertion in *The Naturalist;* yet I am induced to send them, in hopes of seeing a suggestion from your pen, to some of your junior readers, of a plan of noting, in a corner of your Journal, the first appearance of the Spring wild flowers, the arrival of the Nightingale, Cuckoo, and Swallows, with other indications of the vernal season, in their respective neighbourhoods.

The number for February is now before me, with an admirable engraving of the portrait of Mr. H. C. Watson. I think it the best of the three already issued.

I have read Mr. Rylands's article on *Papilio podalirius* with much interest, hoping to find one of my eight specimens of the "Swallow-tail Butterflies," captured in the plantation near here, of that rare kind; but I fear not. Possibly he would favour us with a plate and description of that beautiful creature.

I am happy in being able to add, by way of conclusion, that I have recommended your Miscellany to a former subscriber to Rennie's *Field Naturalist*, who was not before aware of its existence.

I am, Dear Sir,
Sincerely and respectfully yours,

Richard Pigott.

Stoke, Norfolk,
Feb. 2, 1839.

[*Papilio podalirius* has been figured and described in CURTIS's *British Entomology;* but we are not at present able to state in which volume or number. —ED.]

CHAPTER OF CRITICISM.

PHRENOLOGICAL QUERY.

To the Editor of the Naturalist.

SIR,—At the close of your interesting memoir of Mr. HEWETT C. WATSON (p. 269), you state that the portrait of that gentleman "will, TO A CERTAIN EXTENT, confirm our remarks, *ante*, on Mr. W.'s mental powers." Now, Mr. EDITOR, this qualified sentence seems to insinuate, either that your portrait is not a faithful one, or else that entire reliance cannot safely be placed in the phrenological theory. Some artists pay but little attention to the shape of the *head;* but as it is distinctly mentioned that "especial care" was "taken with the shape of the head," and as Mr. HAGHE's artistical ability is well known to the public, the sentence alluded to seems a little unaccountable, if I may be allowed to say so.

Had you, Sir, been hitherto either lukewarm in the cause, or decidedly opposed to it, I should not have considered the passage remarkable; but the fact of a zealous and able phrenologist becoming sceptical *does* require a little explanation. I do not myself profess any knowledge of the theory, being merely a "looker-on," confident that truth will in the long run be elicited. But the *anti*'s are always ready to "make a handle" of these things.

VERACITY OF TRAVELLERS.

I am glad to see (p. 322) that you have given a bit of a *hint* to travellers that *all* their readers do not believe the ridiculous fables which they so frequently palm upon the public. A friend of mine, alluding to Mr. TEMPLE's tale of the Condor, and your observations thereon, jocosely remarked that if at the time of such absurd political whims as at present "agitate" this devoted land, he were to publish *Travels in Africa*, stating that the Lions, Tigers, Panthers, and Leopards of that country had lately held a numerous meeting on the Desert of Joz, to petition their legislature for "Universal Suffrage," and that the meeting had unanimously agreed to support the great principles of the *Panthers' Charter*, besides sending "delegates" to the "Convention," and collecting sundry savory

joints by way of "national rent," no doubt the whole story would be implicitly believed; and "philosophers" would forthwith set about investigating the cause of so curious and interesting a phenomenon!

I remain,

Yours faithfully,

Newcastle-on-Tyne, *March* 3, 1839. CARLO CONDOR.

[A very little reflection would have satisfied Mr. "CONDOR" that a portrait cannot possibly confirm a written phrenological character except "*to a certain extent.*" Does he imagine all the organs of the mind to be confined to the frontal region? Only from such an error, we think, could his misapprehension have arisen.—ED.]

QUERY RESPECTING *Victoria regalis*.

To the Editor of the Naturalist.

DEAR SIR,—* * * The plant discovered by SCHOMBURGK has in the Continental periodicals been named both *Victoria regalis* and *V. regina?* Which is correct? * * * * * *

Yours, with esteem,

Berlin, *Jan.* 7, 1839. K. V. MEYER, M.D.

[In our Vol. II., p. 492, it is stated, by Dr. WEISSENBORN, of Weimar, that "the plant named by SCHOMBURGK *Victoria regina* is unquestionably *Euryale Amazonica*, PÖPPIG. It is therefore probable that Mr. S. will be under the necessity of withdrawing his name."—ED.]

THE NATURALIST'S LITERARY PORTRAIT-GALLERY.*

(Continued from p. 269.)

No. IV.—WILLIAM HOWITT.

WILLIAM HOWITT was born on the 18th of December, 1792, at Heanor, in Derbyshire. His ancestors, both paternal and maternal, have long resided in that neighbourhood. His mother was PHŒBE TANTUM, of Heanor Fall, which

* This series—comprising zoologists, botanists, geologists, and meteorologists, and including both scientific and popular naturalists—will be continued every alternate month, each memoir being accompanied by a portrait and autograph.—ED.

estate has been in her family for many generations. She is still living at the age of eighty, beloved by all who know her, for the benevolence of her character and her Samaritan-like sympathy with all that are in suffering and distress. His father, THOMAS HOWITT, Esq., is also still living at Heanor, at an advanced age.

The HOWITTS have been for many generations considerable landed proprietors in Derbyshire. In the reign of ELIZABETH a THOMAS HOWITT, Esq., married a Miss MIDDLETON, co-heiress of the manors of Grattan, in the Peak, and of Wansley and Eastwood, in Nottinghamshire. On the division of the estate, the manors of Wansley and Eastwood fell to the lot of Mrs. HOWITT, who came to reside with her husband at Wansley Hall.

The HOWITTS appear to have been of the old school of country squires, who led a jolly careless life—hunting, shooting, feasting, and leaving their estate to take care of itself as it might, and which, of course, fell into a steady consumption. The broad lands of Wansley and Eastwood slipped away piece-meal; Wansley Hall and its surrounding demesne followed; the rectory of Eastwood, which had been a comfortable berth for a younger son, was the last portion of Miss MIDDLETON's dowry which lingered in the family, and that was eventually sold to the PLUMTRE family, in which it yet remains. The Rectors of Eastwood appear, from family documents, to have very faithfully followed out such an education as they may be supposed to have received from their parents. They were more devoted to the field than the pulpit; and the exploits of the last rector of the name of HOWITT and old Squire ROLLESTON, of Watnall, are not yet forgotten.

The demesne of one heiress being dissipated, there was not wanting another with which to repair the waste with her gold. The great-grandfather of our author married the daughter and sole heiress of THOMAS CHARLTON, Esq., of Chilwell, in Nottinghamshire, with whom he received a large sum in money. This was soon spent, and so much was the lady's father exasperated at the hopeless waste of his son-in-law, that he cut off his own daughter with a shilling, though she had a family; and adopted a lawyer, of Lincoln's-Inn, of his own name of CHARLTON, but of no relationship whatever; in whose descendents the estate of Chilwell is still vested. The disinherited man did not, however, learn wisdom from this lesson, unless he considered it wisdom "to daff the world aside and let it pass;" he adhered stoutly to the hereditary habits and maxims of his ancestors; and a wealthy old aunt of his, residing at Derby, getting a suspicion that he only waited her death to squander her hoard too, adopted the stratagem of sending a messenger to Heanor to announce to him her decease. The result justified her fears. The jolly squire liberally rewarded the messenger, and setting the village-bells a-ringing, began his journey towards Derby to take

possession. To his great consternation and chagrin, however, instead of finding the lady dead, he found her very much alive indeed, and ready to receive him with a most emphatic announcement, that she had followed the example of his father-in-law, and had struck him out of her will altogether. She faithfully kept her word, and in the time of Mr. HOWITT's grandfather the whole of the family property (except what was in the possession of some younger branches) was consumed, or had passed into other hands. The only legacy which this spendthrift left was his great two-handled breakfast-pot, out of which he consumed every morning as much toast and ale as would have become a baron of the fourteenth century.

This old gentleman seems to have been not only of a most reckless, but also of an unresentful disposition. He appears to have continued a familiar intercourse with the gentleman who superseded him in the Chilwell estate, and Mr. CHARLTON likewise maintained towards him a conduct that was very honorable. The disinherited squire was one of the true Squire-WESTERN school, and spent the remainder of his life in a manner particularly characteristic of the times. He and another dilapidated old gentleman of the name of JOHNSON, used to proceed from house to house amongst their friends, till probably they had scarcely a home of their own, carousing and drinking "jolly good ale and old." They sojourned at Chilwell, regularly going out with the greyhounds in the morning, or if it were Summer a-fishing, and carousing in the evenings, till one day the butler gave them the hint, by announcing that "the barrel was out." On this they proceeded to Lord MIDDLETON's, at Wollerton, and after a similar career and a similar carousing, to the house of a gentleman in Lincolnshire. The building of Wollerton Hall, it is said, had considerably impoverished the MIDDLETON family; but Lord MIDDLETON was unmarried; and as the Lincolnshire gentleman had an only daughter and a splendid fortune, family tradition says, that by extolling the parties to each other a match was brought about by these old gentlemen, much to the satisfaction of both sides; and they were made free of the cellar and the greyhounds for the remainder of their lives.

The son of this spendthrift, instead of being possessor of Chilwell, became a manager of a part of the estate for the fortunate proprietor. There was, however, a friendly feeling always kept up between the CHARLTONS and the HOWITTS, and by this means the father of our author—who was a man of a different stamp from his progenitors—was enabled, in some degree, to restore the fortunes of the family, and established a handsome property. Miss TANTUM, whom he married, was a member of the Society of Friends, as her ancestors had been from the commencement of the Society, and Mr. THOMAS HOWITT, previous to his marriage, as was required by the rules of the Friends, entered the Society, and has always

continued in it. This might confirm those habits of prudence, sobriety, and good sense which always distinguished him, but for which his forefathers were any thing but remarkable.

Mr. William Howitt is one of six brothers, the eldest of whom died in America, and the remainder of whom are all settled in their native part of the country. Mr. Richard Howitt, of Nottingham, a younger brother of our author, is a genuine poet of rising reputation; and Dr. Godfrey Howitt, the youngest brother, is a physician there, and a most devoted and accomplished naturalist. Mr. William Howitt was educated at different schools of the Friends; but, as we have frequently heard him declare, was much more indebted to a steady practice of self-instruction than to any school or teacher whatever. He early shewed a predeliction for Poetry, and in a periodical of that day, called *Literary Recreations,* a copy of some verses "On Spring" may be found, stated to be by "William Howitt, a boy 13 years of age." During the time that he was not at school, he was accustomed, with his eldest brother, to stroll all over the country, shooting, coursing, and fishing with an indefatigable zeal which would have delighted any of the Nimrods from whom he was descended. As a boy he had been an eager birds'-nester, and these after-pursuits, together with a strong poetical temperament, and a keen perception of the beauties of Nature, made him familiar with all the haunts, recesses, productions, and creatures of the country. In this manner the greatest portion of his early life was spent. After he arrived at manhood, however, those country pleasures were blended with an active study of Chemistry, Botany, Natural and Moral Philosophy, and of the works of the best writers of Italy, France, and his own country. He also turned the attention of his youngest brother, now Dr. Howitt, to the study of British Botany, and the Doctor has since prosecuted it with more constancy and success than himself. General literature, and Poetry, soon drew his attention more forcibly, and his marriage, in his twenty-eighth year, no doubt naturally contributed to strengthen this tendency. The lady of his choice was Miss Mary Botham, of Uttoxeter, in Staffordshire, also a member of the Society of Friends, and now familiar to the public as the delightful poetess, Mary Howitt. She is, by her mother's side, directly descended from Mr. William Wood, the Irish patentee, about whose halfpence, minted under a contract from the Government of George II., Dean Swift raised such a disturbance with his "Drapier's Letters," successfully preventing the issue of the coinage, and saddling Mr. Wood with a loss of £60,000, Sir Robert Walpole, the minister, resisting all recompense for his loss, although Sir Isaac Newton, who was appointed to assay the coinage, pronounced it better than the contract required, and Mr. Wood, of course, justly entitled to remuneration.* His son, Mr. Charles Wood, the grandfather of

* See Ruding's *Annals of Coinage.*

Mrs. Howitt, and who became assay-master in Jamaica, was the first who introduced platina into Europe.

Mr. Howitt on his marriage went to reside in Staffordshire, and continued there about a year. Mrs. Howitt and himself being of the most congenial taste and disposition, determined to publish jointly a volume of Poetry. This appeared under the title of *The Forest Minstrel*, in 1823. It was highly applauded by the press, and is sufficiently characteristic of both its writers—the irresistible tendency of one to describe natural scenery, and the legendary propensities of the other.

Soon after their marriage they undertook a walk into Scotland, having long mutually admired warmly the ballad Poetry and traditions of that country. In this ramble, after landing at Dumbarton, they went on over mountain and moorland wherever they proposed to go, for one thousand miles, walking more than five hundred of it, Mrs. Howitt not only performing the journey without fatigue, but to the evident benefit of her health. She had been well prepared for such an excursion by her habit of exploring the country around Uttoxeter and Needwood Forest, in her maiden days, with her amiable sister, now Mrs. Daniel Harrison, of Liverpool. In this ramble they crossed Ben Lomond without a guide, and after enjoying the most magnificent spectacle of the clouds alternately shrouding and breaking away from the chaos of mountains around them, were enveloped by a dense cloud, and only able to effect their descent with great difficulty and with considerable hazard. They visited Loch Katrine, Stirling, Edinburgh, and all the beautiful scenery for many miles round it, traversed Fifeshire, and then, taking Abbotsford in their route, walked through the more Southern parts, visiting many places interesting for their historical or poetical associations, on to Gretna-Green, where all the villagers turned out brimfull of mirth, supposing they were come there to be married, especially as they entered the public-house where such matches are completed, and engaged the landlord to put them in the way to Carlisle. After visiting the English lakes, they hastened homeward, having, as they have been frequently heard to declare, enjoyed the most delightful journey imaginable.

Soon after their return, they settled in Nottingham; Mr. Howitt, though actively engaged in business, still devoting his leisure to literary pursuits. Here they soon published another joint volume of poems, called *The Desolation of Eyam*, which was received with equal favour by the public. The attention which these two volumes excited brought many applications from the Editors of Annuals and Magazines, and both Mr. and Mrs. Howitt for some years contributed a great variety of articles to these publications. Of the ballad and legendary poems dispersed through them by Mrs. Howitt, we believe Mr. Howitt is intending to bring out a beautifully-embellished volume.

The circumstance of their names having thus become attached to so many separate articles, now led Mr. and Mrs. Howitt to a separate publication of volumes. Mrs. Howitt has since published *The Seven Temptations*, a dramatic work of high character; *Wood-Leighton*, a prose work of fiction, and several volumes for the young, all of which have acquired deserved popularity.

In 1832 Mr. Howitt produced the *Book of the Seasons*, a volume the publication of which was attended by a circumstance curious in itself, and which should teach young authors not to be discouraged by the opinions of publishers. *The* Book of the Seasons *was offered to four of the principal publishing houses and rejected by them; till the author, in disgust, told the gentleman in whose hands it was left, to tie a stone to the MS., and fling it over London Bridge.* At length Colburn and Bentley took it: the press with one simultaneous cheer of approbation saluted its appearance; it has since gone through six large editions, and a seventh is now preparing!

In 1834 Mr. Howitt published a work of a very different description, the *History of Priestcraft*, which was still more successful, having already run through six editions, some of them of 3,000 copies each. The work, of course, excited as much abuse from one party as applause from another; but the readers of the *Book of the Seasons* could not comprehend how the same spirit could produce both these works. The union is, nevertheless, perfectly compatible. The *Book of the Seasons* is full of kindly and gentle feeling; but the mind capable of that kindly feeling, and yet not of high and virtuous indignation, must be a weak mind. It should be recollected that Mr. Howitt was born and educated a Quaker. He had imbued himself with the writings and spirit of the first Quakers, who were a sturdy race, and suffered much persecution from the Established Church. This was quite sufficient to explain why Mr. Howitt, with the most liberal feelings towards all denominations of Christians, should have regarded a state religion as an injury to his fellow citizens, and have written this remarkable book.

In 1835 our author published "*Pantika*, or Traditions of the most Ancient Times," a work of imagination, on which the highest eulogiums were pronounced by the critics, and which we have no hesitation in classing as the most brilliant production of Mr. Howitt's pen, and as one of the most extraordinary works of imagination in the language.

The publication of the *History of Priestcraft* may be said to have driven our author from Nottingham. Till then he lived in great privacy; but this volume discovered to his townsmen that he possessed political opinions. He appeared then as the advocate of popular rights, and in that town there is a considerable portion of the population which has always been greatly in want of zealous and able leaders. These seized on Mr. Howitt as a champion unexpectedly found.

He was in a manner forced at once, and contrary to his habits and inclination, into public life. He was called upon to arrange and address public meetings. He was made an Alderman of the borough, and looked to as the advocate of all popular measures. It was found that, although unused to public speaking, he possessed a vehement eloquence which excited his hearers to enthusiasm, and carried them according to his will. A speech of his in the Town Hall, on some Irish question, in which he introduced some remarks on O'Connell, so agitated his hearers, that they simultaneously announced their determination to invite O'Connell to a public dinner, which they forthwith did. It was hoped by the people of Nottingham that they had found a man amply capable and willing to advocate their interests; but this was not the life which Mr. Howitt had marked out for himself. No sphere could have afforded a greater opportunity of doing good to his fellow men than the one he now occupied, but to do that it required an independent fortune. Mr. Howitt's was limited; and finding his time and energies wholly absorbed by extraneous circumstances, he deemed it his duty to his children to withdraw to a more secluded place of residence. He therefore removed to Esher, in Surrey, a place which gave him the fullest retirement, in a beautiful country, while it afforded a ready communication with the metropolis. There he has resided rather more than two years.

Before leaving Nottingham, his fellow townsmen, in a very numerous public meeting, voted him a silver inkstand, as an appropriate testimony of their esteem; and, before settling at Esher, he and Mrs. Howitt made another excursion into the North of England, Scotland, and the Western Isles, traversing the most interesting portions of their journey again on foot. They spent a short time with Mr. Wordsworth and his family at Rydal, and in Edinburgh made the personal acquaintance of Professor Wilson, and most of the literary and eminent characters there. Mr. Howitt also attended a dinner given by the city of Edinburgh to the poet Campbell, and being requested to give as a toast "the English poets Wordsworth, Southey, and Moore," he took the opportunity of pressing on the attention of that brilliant company, that the true way to honour poets was to secure them their copy-right.

Since Mr. Howitt's residence at Esher, he has published the *Rural Life of England*, having previously traversed the country literally from the Land's End to the Scottish borders, to make himself intimately acquainted with the manners and mode of life of the rural population. The work is eminently popular; and while it is full of the kindly and cheerful spirit of the *Book of the Seasons*, has yet higher claims to public favour even than that most pleasant work, from the more exalted nature of its subject, and the enlightened and philosophical views which it takes of society generally.

In the course of last Summer Mr. Howitt published a work entitled *Coloniza-*

tion and Christianity, a popular history of the treatment of the natives by the Europeans in all their colonies; a work which proves that the writer's philanthropic sympathy is not confined to any race or nation, and unfolds a dark chapter in the history of human nature, and which cannot fail to produce the most extensive and beneficial effects. Within the last two months, also, he has published a little book which will gladden many a fireside, *The Boy's Country Book*, a real life of a country boy—being in fact his own early life. He is now employed upon a work which was announced in the *Rural Life of England* as *Visits to Remarkable Places*, old halls, battle-fields, and scenes associated with English History and Poetry.

Mr. Howitt is a naturalist in the truest sense of the term; and his *Book of the Seasons*, no less than Knapp's *Journal of a Naturalist*, and Jesse's *Gleanings in Natural History*, has in no small degree tended to excite a real and lasting love of Nature in the minds of thousands who had previously bestowed but little attention on the subject.

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

BOTANICAL SOCIETY.

The report of this Society for 1838 is before us, and from it we shall make a few extracts. *President*—Mr. J. E. Gray; *Curator*—Mr. Daniel Cooper; *Secretary*—Mr. G. E. Dennes. The plan of appointing local secretaries is judicious; and among them we notice the names of Mr. W. Baxter, Mr. C. Conway, Mr. T. B. Hall, Mr. T. G. R. Rylands, Mr. R. Leyland, Mr. Edwin Lees, Mr. D. Stock, Dr. Krauss, Mr. A. Wallis, and other naturalists favourably known to the public.

The number of Members amounts to one hundred; of which forty-two are Resident, thirty-four Corresponding, and twenty-four Foreign, and forty-seven of whom have been elected since the last anniversary; the Council are happy to state, and we are glad to hear, that no members have seceded.

The Council refer with pleasure to the list of donations to the Library, received from Messrs. J. E. Gray, E. Charlesworth, W. Baxter, D. Cooper, G. E. Dennes, J. Rich, W. F. Rock, Neville Wood, Dr. Krauss, and the Botanical Society of Edinburgh.

The donors to the Herbarium are still more numerous. 18,592 specimens, including 1,050 species, have been received. Besides these, upwards of 10,000 specimens of foreign plants have been presented to the Society.

The Council further acknowledge their obligations to the following members for their interesting communications, some of which will appear in the forthcoming Proceedings of the Society:—Dr. F. Bossey, Messrs. W. M. Chatterley, D. Cooper, G. E. Dennes, J. Riley, R. H. Schomburgk, J. Rich, A. Wallis, W. H. White, &c. &c.

1839.

Jan. 18.—The President in the chair.—Mr. Dennes exhibited garden specimens of *Aspidium rigidum*, sent to him by the Rev. W. T. Bree, from a root brought by him from Ingleboro', Yorkshire, in 1815.—A paper was read by Mr. Cooper, being a continuation of his "Remarks on the Distribution of Plants in the Vicinity of London;" from which it appeared, that of the 104 natural orders, 536 genera, and 1,452 species, mentioned by Lindley in the first edition of his *Synopsis of the British Flora*, Mr. C. had found 82 natural orders, 351 genera, 804 species, as mentioned in the *Flora Metropolitana*—a number, as was shown at the end of the paper, greater than recorded in any other local Flora of Britain, which was attributed to the great diversity of soil in the neighbourhood of the metropolis.

MEDICO-BOTANICAL SOCIETY.

Jan. 23.—Dr. Sigmond, F.L.S., in the chair.—The minutes of the anniversary meeting, held Jan. 16, were read, announcing that Earl Stanhope was re-elected President, with the other officers.—A paper was read on apoplexy, its causes and treatment, by Dr. Hancock. The impropriety of bleeding in many apparent cases of apoplexy was pointed out, as such symptoms were often referrible to diseases of the heart, and even to mere syncope. In connection with this subject, Dr. Sigmond stated that in the generality of accident cases at hospitals, the practice of blood-letting was abolished, as the effect of it was to destroy the power which alone could produce reaction. The Doctor might have added, that in homoeopathic practice bleeding is never resorted to under any circumstances.—The next paper was also from Dr. Hancock, "On the Maize de Dos Meses," indigenous in Venezuela, the Pampas, and other parts of South America, which ripens in two months after sowing the seed, so that three or four successive harvests may be obtained within the year. The author gave it as his opinion, that its cultivation might be introduced into this country with advantage, from the circumstance of its growing well in colder climates in the Pampas. The

grain was described as highly nutritious, and grateful to the taste, and it was considered that it might form a useful addition to the staple food of this country, if proper attention were paid to its culture.

ROYAL SOCIETY OF HORTICULTURE AND AGRICULTURE.

Jan. 8.—Mr. Glenny, F.H.S., in the chair.—Prof. Johnson described several interesting varieties of the genera *Cactus* and *Euphorbia*, which were on the table, and gave a lecture on these remarkable plants, which are now so much admired as objects of cultivation.

ROYAL ASIATIC SOCIETY.

Jan. 19.—Prof. Wilson, Director, in the chair.—A short biographical notice was read by Dr. Royle, on the late Dr. Rotteler, who died at the advanced age of eighty-six years. He was highly distinguished as a botanist, and especially for his researches into the Flora of Zanguebar, and in eliciting information on the Medical Botany of the country. He had been a large contributor to an herbarium, consisting of upwards of 3,000 plants, which had lately been presented by the Church Missionary Society to King's College.—Dr. Royle next read a paper from Mr. Solly, on the production of Caoutchouc in India, an abundant source of it having recently been discovered in Assam, although the mode of preparation at present adopted is objectionable.—Dr. Royle being called upon by the chairman, detailed the results of the inquiries made by the Committee of Agriculture and Commerce, with respect to the growth of American Cotton in India. Several communications on the subject had been received, among which was one from Dr. Falconer, who stated that the upland Georgia Cotton gave hopes that its introduction would be very advantageous. A letter from Mr. Heath stated that the natives might be trusted in its culture, and that in the South of India the Bourbon Cotton-plant had superseded the indigenous varieties, of which there were two, one being annual and the other perennial. He also observed that the vicinity of the sea-coast was not, as had been alleged, necessary for its successful cultivation, as his own experience had shown him that it could well be grown at a distance of 150 miles in the interior, and every hope was given that the introduction of the American varieties would soon prove a great source of industry and wealth in our Eastern possessions. It was pointed out as very desirable that the staple should be sent over in a cleaner state.

ST. ANDREWS LITERARY AND PHILOSOPHICAL SOCIETY.

Jan. 8.—Lord Wm. Douglas in the chair.—The report of the meeting of this flourishing and important Institution occupies five closely-printed columns of the

Fifeshire Journal of Jan. 17, but we have only room to enumerate the titles of the various papers read.

After a considerable number of donations had been announced, Dr. Govan read a paper "On the Vegetable and Mineral Productions of the Himalaya Mountains;" Mr. C. Dempster "On the Invention of the Anti-dry-rot Solution, now generally esteemed as the discovery of Mr. Kyan," but the honour of which the author considers due to himself; Col. Reid "On Predictions of the Weather," which, he conceived, might be made with accuracy: this paper was read by Sir David Brewster; "On the Isle of Albion, showing how it was once firm-land or Continent with France," by Mr. Page; and several other valuable communications.

BLACKBURN PHRENOLOGICAL AND GEOLOGICAL SOCIETY.

Feb. 27.—Mr. Carus delivered an excellent lecture on Phrenology, which, we believe, has appeared in the *Blackburn Gazette*.—The Secretary then read a highly complimentary letter he had received from H. C. Campbell, Esq., one of the Honorary Secretaries of the Manchester Geological Society, accepting the offer of the Blackburn Society to co-operate with them in the study of geological science. Also one from Mr. James Simpson, Advocate, Edinburgh, expressive of his gratification in being elected an Honorary Member. Mr. H. C. Watson and Mr. Neville Wood have likewise been elected Honorary Members.

EXTRACTS FROM FOREIGN PUBLICATIONS.

ZOOLOGY.

1. New Crustacea.—A surgeon of the French navy, M. Mistre, recently arrived at Brest, among several new and interesting objects of Natural History, has brought a new *Macrura*, which he found at Rio Janeiro, in *Pinna nobilis*. The existence of this animal in the seas of the New World is a curious fact in the Geography of Zoology, for since the time of Aristotle, it has only been found in the Mediterranean.

2. Lace made by Caterpillars.—A most extraordinary species of manufacture has been contrived by an officer of engineers residing at Munich. It consists of lace veils, with open patterns in them, made entirely by caterpillars. The following is the mode of proceeding adopted:—Having made a paste of the leaves of the plant on which the species of caterpillar he employs feeds, he spreads it

thinly over a stone, or other flat substance of the required size. He then, with a Camel-hair pencil dipped in Olive-oil, draws the pattern he wishes the insects to leave open. This stone is placed in an inclined position, and a considerable number of the caterpillars are placed at the bottom. A peculiar species is chosen, which spins a strong web; and the animals commence at the bottom, eating and spinning their way up to the top, carefully avoiding every part touched by the oil, but devouring every other part of the paste. The extreme lightness of these veils, combined with some strength, is truly surprising. One of them, measuring 26½ by 17 inches, weighed only a grain and a half, a degree of lightness which will appear more strongly by contrast with other fabrics. One square yard of the substance of which these veils are made weighs 4½ grains, whilst one square yard of silk gauze weighs 137 grains, and one square yard of the finest net weighs 262½ grains.—No mention is made of the particular species of caterpillar employed in this manufacture.

BOTANY.

3. Cultivation of the Tea-plant.—M. Guillemin, assistant naturalist to the botanical department of the Jardin des Plantes, and who has been sent to Brazil to study the mode of cultivating the Tea-plant in that country, and bring back seed and plants, with such information as may lead to its successful introduction into France, arrived at Rio de Janeiro at the end of October. Letters have been received from him, dated Nov. 17, in which he states that he has been most favourably received by the authorities and the botanists of Brazil, who have promised him every assistance in attaining the object of his mission. He relates that the culture of the Tea-tree, which was introduced into Brazil in 1812, has made such progress, particularly since 1825, that it affords a sufficient supply for a considerable part of the consumption of the country. It is in full cultivation at Ouro Preto, and especially in the province of St. Paul. It is also general in the province of Minas, and is carried on in the Botanical Gardens at Rio, where there are about 1,200 plants. The inspector of this establishment, Dr. Jose de Serpa, has promised to afford M. Guillemin every assistance in his power. M. G. was preparing to visit the province of St. Paul; and there is every reason to expect that the hopes of the Government from his mission will be realized.

REVIEWS OF NEW PUBLICATIONS.

Illustrations of the Botany and other Branches of the Natural History of the Himalayan Mountains, and of the Flora of Cashmere. By J. Forbes Royle, M.D., V.-P.R.S., F.L., G., R.A.SS., Professor of Materia-Medica and Therapeutics, King's College, &c. &c. &c. Part X. London: *Wm. H. Allen and Co.* Royal 4to. pp. 48, and 10 coloured lithographs.

Despite the disadvantage of being called upon to pronounce judgment from our critical tribunal on the *tenth* part of any serial publication, we run small risk of departing from the truth in conceiving Dr. Royle's *Illustrations* to be one of those few-and-far-between works so justly styled *national*. The descriptions —including detail respecting structure, habitat, geography, classification, specific characters, &c. &c.—are prepared in a manner which would reflect credit on any botanist, and which at once stamp Professor Royle as the learned naturalist and classical scholar.

The author does not confine himself to descriptions of species, but renders his work of still further value by his original observations on the higher groups.

The illustrations consist of very spirited lithographs, coloured in a superior style.

Thus far we have ventured. To go further into detail at present, were no less unfair to the author than to our own selves.

It appears by a notice at the commencement of the present part, that "it is proposed to publish a supplementary number, in which will be contained the conclusion of the botanical part, together with that of the Introduction, in which will be included Essays by Mr. Ogilby and the Rev. F. W. Hope on the mammalia and insects of India; with remarks on the general features of the Geology and Meteorology of Northern India, and an index to the whole."

Until the appearance of the promised riches, then, let all further remarks be postponed.

A Monograph on the Anatidæ, or Duck-tribe. By T. C. Eyton, Esq., F.L.S., F.Z.S. London: *Longman and Co.; Eddowes*, Shrewsbury. 1838. 4to, pp. 183.

To those who know, or are desirous of learning, something further of the Duck-tribe than that it includes several birds whose flesh, artistically cooked, is exceeding grateful to the palate, such a volume as Mr. Eyton's must prove

of no small interest, treating, as it does, of a group the habits and structure of whose members are less accurately known than those of many equally extensive divisions.

The work includes all the birds comprised under the great genus *Anas* of Linnæus, afterwards divided, by "moderate reformers," into *Anas*, *Cygnus*, and *Anser*, popularly known as Ducks, Swans, and Geese, and which were only recognized as *sections* by Linnæan systematists. But then there arose a race of "*ultras*"—or what were then so termed—headed by the Baron Cuvier, who, despising all "half measures," split up the venerable establishment into a large number of small genera. This was of course considered a gross outrage upon the feelings of the Linnæans; although those who have carried their studies further back than the date of the *Systema Naturæ*, will be aware that the recent institution of limited genera is rather an innovation relatively to Linnæan practice, than absolutely. The above estimate, be it observed, is exclusive of a small portion of the *Anatidæ*, viz., the Mergansers, *Mergus*, which have remained *in statu quo* "through all the changing scenes of" arrangements and systems, unaltered by the ceaseless fluctuations which they have calmly witnessed on all sides, ever since Man has been smitten with the desire of deriving systematic amusement from the feathered creation.

Thus much for Mr. Eyton's predecessors. Now for the author himself. His arrangement runs thus:—

Family Anatidæ.

Sub-fam. Plectropterinæ.—*Choristopus*, *Plectropterus*.

Sub-fam. Anserinæ.—*Cereopsis*, *Chloephaga*, *Bernicla*, *Cheniscus*, *Anser*, *Cygnus*, *Sarkidiornis*, *Chenalopex*.

Sub-fam. Anatinæ.—*Tadorna*, *Casarka*, *Dendrocygna*, *Leptotarsis*, *Dafila*, *Pœcillonitta*, *Mareca*, *Aia*, *Querquedula*, *Cyanopterus*, *Rhynchapsis*, *Malacorhynchus*, *Chauliodes*, *Anas*, *Carina*.

Sub-fam. Fuligulinæ.—*Micropterus*, *Melanitta*, *Somateria*, *Polysticta*, *Camptorhynchus*, *Callichen*, *Fuligula*, *Nyroca*, *Harelda*, *Clangula*.

Sub-fam. Erismaturinæ.—*Thalassornis*, *Biziura*, *Erismatura*.

Sub-fam. Merginæ.—*Mergus*.

Mr. Eyton's "chief aim has been, not the invention of new species, but the establishment of old ones, in which he flatters himself," not without reason, that "he has succeeded." The descriptions—in many cases those of entirely new species—relate exclusively to the external and internal characters of the birds, illustrated by a considerable number of beautiful lithographs. Both figures and descriptions are generally original, and appear to be carefully executed. Besides these, there are some remarkably fine coloured lithographs of new or little-known species, from drawings by E. Lear.

The specific characters are preceded by an "introductory chapter" of general observations on the *Anatidæ*, but not calculated for analysis.

Last in order, though not natives of the Emerald Isle, we shall notice the author's *Preface*. He here acknowledges his obligations to Dr. Andrew Smith, the Earl of Derby, Mr. Charles Darwin, Mr. Yarrell, and Mr. Gould, for various services rendered by those gentlemen. He then proceeds to state that, subsequent to the composition of his *Monograph*, he has received Mr. Swainson's recently-published *Animals in Menageries*, mentioning the changes of nomenclature promulgated by that learned naturalist, but stating at the same time that he cannot agree with Mr. S. as to their propriety. *Animals in Menageries* seems a subject unsuited to Mr. Swainson's pen. We have not seen the work, but according to Mr. Eyton "there is little new in it as regards the class we at present are endeavouring to illustrate, the greater part of the letter-press being copied from Latham."

At the conclusion of his Preface the author passes unqualified censure on Herr Brehm's work on the birds of Germany; but surely he must be too little acquainted with the language in which the book is written to be a competent judge of its merits, or else his carelessness is reprehensible, in quoting its title,—"*Hanbuck der Naturgeschite aller vogel Deutschlands.*" In six words here are five mistakes; for although M. Brehm's work does not grace our library, we believe we are safe in stating that the real title is,—*Handbuch der Naturgeschichte aller Vögel Deutschlands.* These *minutiæ*—if such they be—are worth attending to in a monograph which will probably find its way into the hands of Continental naturalists. Neither English or foreign writers are sufficiently careful in this respect.

Mr. Eyton is already favourably known to the ornithological world by his *History of the Rarer British Birds*; and the present accurate and useful *Monograph on the Anatidæ* will serve to fortify the esteem in which he is held as a scientific naturalist.

Dearden's Miscellany. No. iii. March, 1839. London: *Orr and Co.; Dearden*, Nottingham. 8vo. pp. 64.

Though principally devoted to literature, this pleasing and well-selected Magazine likewise contains a fair sprinkling of scientific miscellanea, as witness the article on "Adaptations in Fishes" in the present number. We cannot but view with pleasure this addition to the periodical literature of the Provinces.

LITERARY INTELLIGENCE.

"*Florigraphia Britannica*, or, Engravings and Descriptions of the Flowering Plants and Ferns of Britain, will be continued in March, 1839." [We have received this notice without any knowledge on our part of the author or publisher of the work alluded to.—Ed.]—Mrs. J. C. Loudon is publishing a volume entitled,—*The Ladies' Flower-Garden of Ornamental Annuals*, to be completed in 15 or 16 4to. Nos.—*Natural History and Illustrations of the British Salmonidæ*, by Sir William Jardine, Bart., F.R.S.E., will shortly be commenced, to appear in Nos.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Kestril Falcon near Scarborough.—This bird is somewhat numerous on the rocky parts of our coast, where it breeds, to the great annoyance of the Rock Pigeon, which, well knowing its neighbour's habits, does not consider it a desirable friend to watch over the cradle of its young during the absence of the parents.

It has been with some a matter of doubt whether the Kestril does either pursue or prey upon other birds. To settle this question, I may state that one in my possession was shot by myself in the act of striking a Starling, after a smart chase.—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.

Length of the Sheep's Life.—In regard to the number of years to which our domestic animals would attain were they allowed to live until they died of "mere old age," is a question, we believe, not very accurately determined by naturalists. The following account of a Sheep is, to our own knowledge, perfectly correct. The daughter of a gentleman in the county of Fife, left this country for India many years ago, and previously to leaving home she made a pet of a motherless lamb. This animal was allowed to go unmolested in the lawn; it was old when the lady returned to Britain, and died about the beginning of last month, in its sixteenth year—that is, within a few weeks of sixteen years old.—*Berwick Advertiser*, *March* 9, 1839.

Acosmetia Morrisii.—I took my specimen of this insect in the dusk of the evening, at Charmouth, Dorsetshire, July 8, 1835, in a path in a Wheat-field

near the river Char, where there are Rushes, &c. It comes near *Acosmetia arcuosa*, but it is whiter; and had it not been for Mr. Morris's fine specimens, I should probably not have noticed mine as a distinct species. The second wings are rather dusky. The thorax in my specimen is rubbed.—J. C. Dale, *Glanville's Wootton, Dorsetshire, June* 9, 1837.

A Talking Canary.—Such a marvel is now exhibiting in the Cosmorama-rooms, in Regent-Street. The loquacious Canary articulates with singular neatness and fluency, and with as much ease and volubility as he warbles—though his vocabulary is very limited, of course. In the midst of a snatch of a song you hear him pronounce these words,—"Sweet pretty little Dicky," "Pretty Queen," "Dicky dear," and other fond appellations bestowed upon him by his mistress; he also makes a chirping imitation of a bell ringing, and calls "Mary."—*Spectator.*

A Monkey Case in Court.—On Thursday last *two* culprits were placed at the bar of the police-court, Liverpool, before William Wallace Currie, Esq. (Mr. Hall being at the time absent), to answer to a charge of having wilfully destroyed some property which was being conveyed along Seel-Street. In the persons of the alleged transgressors, we recognized an itinerant foreigner, Francis Rose, and his Monkey, "Jocko," who, with the addition of a "Dog," which the latter uses as a "Horse," had, for some days, been amusing the lieges, for what they could obtain in copper, in various parts of the town. Jocko appeared in the full dress in which he had been taken into custody, which was of scarlet cloth, with a cap, &c., quite *à la militaire*. He had, however, been subjected by the peace-officers to the temporary indignity of being deprived of his tin sword, which he is in the habit of drawing, wielding, and sheathing with exemplary dexterity. He took his station, beside his companion, on the front of the bar, which he at first grasped and shook with considerable violence, in demonstration, doubtless, of the indignation he felt in being accused of any thing derogatory to the character of "an officer and a gentleman." The complainant gave the magistrate to understand that, on the previous day, while he was passing along the street, with a basket containing a dozen small bottles, he was attracted, among others, by the vivacious performances of the minor prisoner, who, it appears, is an adept in the manual and platoon exercises, as well as master of a broad-sword of about six inches in length. Some bystander (continued the aggrieved) threw down a half-penny, which he (complainant), setting down his basket, went to pick up; but, while he was in the act of doing so, Captain Jocko (doubtless deeming himself the official collector of the revenues, and irritated by the boy's interference) ran to the basket, and, upsetting it with a truly military air of nonchalance, dashed its brittle contents into a hundred fragments on the pavement! The charge against the larger prisoner was, that he abetted his companion in the work of

destruction; and the value of the property thus demolished (which was totally uninsured against such risks) was stated to amount, in the estimation of competent valuators, to the sum of one shilling. During the hearing of the complaint, Captain Jocko entertained the court by sundry dances and grimaces; but, apparently, either considering his performances not sufficiently appreciated—not a half-penny being tendered by way of acknowledgment thereof—or being put out of temper on hearing a charge to which he could not deign to reply, he, towards the conclusion of the evidence, became somewhat restive, and so menacing withal in his movements, that some attorneys, seated just under the bar, were fain to retreat, amidst the laughter of the court, lest he should exhibit his newest Parisian gallopade upon their heads! It was lucky, indeed, that his companion, who knew the formidable nature of his attacks in moments of excitement, had taken the precaution to restrain him, by a cord fixed round his fashionable black stock, otherwise he would probably have cleared the court, twenty at a time, after the manner in which his great predecessor, Captain Bobadil, proposed to defeat an army. At length Jocko, abandoning his propriety in his impatience, deliberately turned (to his shame be it spoken!) his "hinder part" upon the seat of justice, as if in contempt of its authority, and (to the equal discredit of the audience) the court became convulsed with laughter. Jocko, admonished by his companion, who put on the captain's military cap, appeared to be aware of the impropriety of his conduct and the jeopardy in which it might place him, if he failed to made the *amende honorable;* so he voluntarily turned round, stood upright on the bar, took off his cap, with the air of a well-bred gentleman, and made several rapid, though respectful bows to the bench. The relenting magistrate instantly accepted the apology, graciously saying, "That will do! that is enough!"—(Peels of laughter.) The other prisoner, after gazing on Jocko, as if to say "*You* have brought all this upon *us!*" intimated in broken English, "*We* will pay the amount of the damage done, if you will discharge *us.*" Mr. Currie readily acceded, and the prisoners twain were set at liberty. We need scarcely add, that the court was, throughout, convulsed with laughter.

Young Redstarts in February.—On Saturday last, as a workman was employed in taking down a thatched shed, on the premises of Mr. Perkins, at Leek-Wootton, he was astonished at discovering in the thatch a bird's nest with two young ones in it. We understand that the bird is of the kind generally called by the villagers, the "Fire Red-tail." The fact is, we believe, remarkable at this time of the year.—*Northern Star, March* 2, 1839.

The Corn Crake a Summer Visitant.—A Corn Crake was shot last week, near Wareham. All writers on the subject agree, we believe, that these birds leave the country before the Winter sets in. Mudie says that they leave in September. The bird was in good condition, and weighed six ounces.—*Chester*

Gazette, *Feb.* 7, 1839.—[A few individuals of the Corn Crake may possibly occasionally winter in Britain; but that, as a species, they are migratory, is beyond all question. They arrive towards the end of April, and would be very partially known to the casual observer but for the deep "*crek*, *crek*" of the male—a sound conveying the most pleasing associations to our minds, and which may frequently be heard throughout the night.—Ed. *Nat.*]

Birmingham Meeting of the British Association.—The first meeting of the general Committee will take place at Birmingham on Saturday, Aug. 25; and the various Sections for scientific business will meet in the week commencing Aug. 27. The local Committee are already busily engaged in making the preliminary arrangements.

A Colloquy on Pigs.—"Friend," said a Quaker to a man who was tending a drove of Swine near Penobscot, "hast thee any hogs with *large bones* in this drove?"—"Yes," replied the drover, "they 've all got big bones."—"Hast thee any with *long heads* and *sharp noses?*"—"Yes, the're all o' them long heads and sharp snouts."—"Hast thee any with *broad flap ears*, like the ears of Elephants, slouching down over their eyes?"—"Stranger, every Pig of them is that 'ere, and no mistake; they'll suit you exactly."—"I rather think they will *not* suit me, friend, if they be such as thee describest. Thee may'st drive on."—*Charter*, *March* 17, 1839.

The Sense of Taste in Animals.—All animals having a mouth and stomach have probably taste. To disprove a common opinion that birds have but little taste, Dr. Gall mentions that Blumenbach finds the organ much larger proportionally in the Duck than in the Goose; that the palates of many are supplied with very strong and large nervous papillæ; that many birds bruise insects and grains; and many, if different kinds of food be given them, select the most agreeable; that, if whole Ants be given to fresh-caught Nightingales, the birds usually reject them, but when bruised they are swallowed with avidity; that those birds which swallow their food whole, distinguish different berries and grains with their beak, so that, although all may be taken into the mouth indifferently, the unsuitable are presently rejected; that Swans will crush and greedily swallow Rats and Frogs, but instantly refuse to swallow Toads; and that Swallows, and all birds that feed on insects, devour Bees and large Flies, but reject various insects. He reproves M. Duméril for supposing, before the Institute of France, that Nature has supplied fishes with a tongue possessed of a fine membrane, and not given it the sense of taste. Different animals are differently affected by various sapid substances: what is disgusting to some is delightful to others; what would make us sick is often a dainty to certain brutes. Gall refutes the absurd opinion of Professor Akerman, that the perfection of Man's intellect arises from the perfection of his senses, and that Man has a finer

taste than brutes, by stating that the papillæ of the tongue, pharynx, palate, &c., are proportionally larger and more numerous in brutes; that, to increase the surface of taste, many brutes have the membrane of their palate furrowed and sprinkled with a multitude of nervous papillæ; and that the eating apparatus is in most of them larger than in Man; that the Dog, Bear, and Monkey, have their tongue covered with as fine a membrane as that of Man; and that the enjoyment of taste appears the greatest and most enduring of all in many, as they are eating and ruminating almost constantly while awake.—Elliotson's *Physiology*.

A Sporting Cow.—The Galewood hounds met at Ford Common on Monday last, and found a Fox somewhere in that neighbourhood, which after a severe run was fortunate enough to baffle all his foes among the complicated mazes of Tindal-House Wood. As the hunting party went galloping along by the village of Etal, a white cow, belonging to Mr. Smith, of Etal Mill, feeding in a court-yard with two or three others, on hearing the blast of the horn which the whipper-in was sounding to warn in some of the stray Dogs which had been left out of the chase, became so elated that she commenced scampering in good earnest, and cleared the gate of the yard in gallant style. She next went boldly at another gate which opposed her, but missing her footing, she alighted on it with her breast, and smashed it to the ground. The gate that she leaped over successfully was upwards of five feet two inches.—*Berwick Advertiser*.

A Zoological Jonathanism.—A Cat, belonging to a widow, sat lately upon half-a-dozen Duck's eggs, and continued her attentions until the eggs were hatched; and there is now to be seen a fine brood of six young ones, half Duck and half Cat, having Duck's heads and Cat's tails; and, what is still more wonderful, they mew and quack alternately.—*American paper*.

Golden Eagle shot near Holderness.—A specimen of this rare and noble bird has recently been killed near Holderness.—Patrick Hawkridge, *Scarborough, August* 7, 1837.

The Buzzard (*Falco buteo*) near Scarborough.—This species is found in the plantations above the mere near Scarborough, but is not numerous.—*Id.*

The Marsh Harrier (*Falco æruginosus*) near Scarborough.—The Marsh Harrier has occasionally been shot on the swampy moors near this town; and specimens of it are in the Scarborough Museum.—*Id.*

An Entomological Rhapsody.—Oh! my dear friends (continued Mr. Rumshaw), could you but once become embued with the philosophy of Entomology, you would, like me, revel in its delights from early dawn till dusk of evening,—with me would you entomologise in the clear cool morning, when the Swallows are similarly occupied,—with me roam, like the Ant-eater, o'er the hills in the heat of a noon-day sun,—with me, I say, would you follow the Nightjar in its nocturnal rambles, admiring Nature everywhere pregnant with Beetles. Oh!

had I the wings of a Dove, I might soar away, but never could I be more delightfully at rest in mind, than when capturing a new Wasp, or some other sweet creature. Those who attempt to teach mortals the art of flying, are indeed useful members of society, since by its means we should be enabled to capture, both alive and dead, many lovely "children of the sun", which seldom or never condescend to visit us here below, and several of them, I doubt not, armed with stings and other weapons of defence. Man was undoubtedly created with the special view of studying the sublime, the ever-varied pleasure afforded by the insect race. Without them, let us never forget that we should be mere grovelling mortals, toiling on in the dull cold routine of ordinary life, without other object than the satisfying of our carnal desires. Oh! God be praised that the high desires of entomologists have been thus far crowned with success; and may that Being who tempers the wind to the shorn caterpillar continue to favour with his divine inspiration the gifted mortals who are now and ever wandering the longitude and latitude of this insect-blessed land, in search of those creatures which, as is, or ought to be, well-known, form the chief essential of sublunary bliss.—*Life and Adventures of John Rumshaw.*

Distribution of the Mountain Linnet (*Linota montana**).—The Mountain Linnet, as its name would imply, prefers high hills and mountains, or, at least, an interchange of moor and fell. Dr. Latham sent Col. Montagu a nest and eggs taken in Yorkshire; and according to Mr. Neville Wood, this bird breeds in some parts of Staffordshire and in Derbyshire, exhibiting its partiality to the higher grounds. This is probably about the Southern limit of its breeding ground in this country.

Mr. Thompson says it is not uncommon in certain localities in Ireland. Mr. MacGillivray states that "it is plentiful in the Hebrides, and in Winter frequents the corn-yards in large flocks, clinging to the stacks of Oats, and picking out the seeds. Its flight is rapid and undulated, and it wheels over the fields previous to alighting, uttering a soft twitter at intervals. When disturbed it betakes itself to tall trees, or to a distant field; but it is not shy, and may, therefore, be easily approached when feeding. In Spring it forsakes its Winter haunts, and disperses over the hilly tracts, where it forms its nest on the ground, among short Heath, or on the Grassy slopes of craggy spots. It is neatly constructed, being composed externally of fine dry Grass, fragments of Heath, and a little Moss, internally of fibrous roots, wool, and hair. The eggs are bluish white, marked towards the larger end with light brown and purplish red, sometimes with a few blackish dots."

Sir William Jardine sends me word that the Mountain Linnet is abundant

* The name *Linaria* is inadmissible, having been pre-occupied in Botany.—Ed.

in the North Highlands, taking the place there in Summer of the Common Linnet, *L. cannabina*, in the Lowlands. "Once or twice," this gentleman observes, "I have seen a flock here during the Winter, frequenting wild stubble land. Last Winter I shot a pair within a few hundred yards of Jardine Hall, evidently driven in by the storm. They were feeding on the heads of the Black Knapweed, *Centaurea nigra*."

Mr. SELBY "found it a plentiful species, and generally distributed, in Sutherlandshire. It was first met with at Laing, and afterwards occurred at all the different stations that were occupied. Its song was pleasing, though scarcely equal in compass to that of *L. cannabina*."

The Rev. Mr. Low states, in his *Fauna Orcadensis*, that "this little bird remains in the Orkneys all the year, building in the Heath, but seldom or never in bushes." Mr. J. D. SALMON, who furnished to Mr. LOUDON'S *Magazine of Natural History* an account of a visit to the Orkneys, has remarked that "The Mountain Linnet was the only species of Linnet seen by the party; two nests came under our observation; one was placed upon the ground, among the young corn, the other amidst some Whins, *Ulex*. They were both alike: their outsides were composed of small roots and dried Grass; and their insides lined with a small quantity of hair and a few feathers; and each contained six eggs, similar in appearance to those of the Common Linnet, but rather smaller."

Mr. DUNN, in his *Ornithologist's Guide to Orkney and Shetland*, says of the Mountain Linnet, or, as it is there called, the Heather Lintee, this, "as far as I am aware, is the only Linnet that breeds in these countries, over which it is pretty numerously dispersed. I have repeatedly taken its nest, which I found in shaded situations amongst long Heath. In the Winter it appears in large flocks, frequently in company with Sparrows and Snow Buntings, and infests the corn-yards." Our Southern bird-catchers say they can tell immediately if there are any Mountain Linnets among the flocks of small birds around them, by their particular note, which is considered to resemble the word "twite" in its sound, and hence the name of Twite, by which, as well as by that of Mountain Linnet, this bird is very generally known. Its food consists of any sort of seed of small size.—YARRELL'S *History of British Birds*.

SAGACITY OF THE DOG.—There used formerly to be as many Dogs as men at the Kirk of Twuidsmuir, Peeblesshire, on account of the difficulty which the farmers and shepherds of that pastoral district had in preventing their canine attendants from following them. The Dogs, in general, behaved pretty well, and lay below the seats; still noisy quarrels among them sometimes took place, and on these occasions the minister had to order the beadle to turn out the disturbers of the peace. With these exceptions, they kept in tolerably good order till the congregation was going to disperse. From long attendance at church, they knew

when this breaking-up was about to take place. The signal for uproar was the rising of the minister in the pulpit to pronounce the blessing. As soon as he did so, they used to rush pell-mell to the door, barking and screeching for joy, to be let loose, and therefore not a word could be heard. At length the minister, honest man, bethought himself of a plan to get quit of these disturbances. He told the members of the congregation that it would be better for them all to keep their seats till the parting benediction was over, and then they would rise, and walk leisurely out. This was tried, and succeeded remarkably well. However, it happened one day that the minister of the parish was absent, and a stranger was in the pulpit, who, when he rose to pronounce the blessing after the last psalm, was surprised to see the congregation sitting, which is against all rule and custom. At last an old grey-haired shepherd called out to him,—"On, just go on, Sir, go on; we are only sitting a wee bit to cheat the Dowgs; but when you have done, we'll all rise, and go out quietly."

Pontia cardamines.—There is a specimen with a very large black spot in the British Museum; and I have one nearly as good, and one with scarcely any black spot. Weaver has an *hermaphrodite!*—William Harris, *Stafford, March 4*, 1839.

A Nice Point touching the Skinning of Eels.—On Monday, before the Worcestershire city magistrates, the agent for the Society for the Prevention of Cruelty to Animals, brought up eight fish-women for cruelty to Eels, in skinning them before life was extinct. The witness said he saw the eight "ladies" cut the throats of their victims, and unmercifully and cruelly pull off their cuticles whilst writhing alive. Mrs. Cork, the most venerable of the fair defendants, became spokeswoman for the party. She declared that she had for three-and-fifty years skinned Eels in the same manner, and in the same market, and never before heard any person complain of it as cruel. (Laughter.) As for "cuticles" (casting a look of scorn at the agent), she declared that she had never skinned such a thing. (Increased laughter.) She exclaimed, "How are we to skin them?" The agent for the Society said, that "if the defendants were to puncture the spinal marrow in the vertebræ about the region of the head, death would ensue." Mrs. Cork stared wildly at the agent, and asked, what was a vertebræ? Was it a fish, a jackass, or a devil? (Laughter.) The agent said it was a joint in the back-bone, which, if separated, would instantly deprive the fish of life. Mrs. Cork perked up a bit, and said she knew that was a lie, for she had many a time cut an Eel into a dozen pieces, and yet it wriggled about in the frying-pan! The defendants, who were discharged, one and all declared that they would get, as speedily as possible, *a translation of the agent's words*, and do as he recommended.

Peregrine Falcon shot in Lancashire.—A beautiful specimen of that spe-

cies of bird known to ornithologists by the name of the *Peregrine Falcon*, or Mountain Buzzard, was shot a few days ago, at Simonstone, by a game-watcher in the employ of L. G. N. Starkie, Esq., of Huntroyde, and, at the time of its being killed, was in the act of tearing to pieces a Hare which it had just seized upon with its talons. The weight of this fine object of the feathered tribe was 2¾lbs. (sixteen ounces to the pound); and its measurement was as follows:—Extreme length, 1 foot 10 inches; width (the wings being fully expanded), 4 feet 2 inches; and height, 1 foot 4 inches. The legs measured each 10 inches in length, and the thighs 4½ inches in circumference.—*Bolton Chronicle, March* 16, 1839.

Early Incubation of the Partridge.—On the 10th of February, a Partridge's nest, containing fourteen eggs, which had been recently sucked by a Weazel, was found by Captain Bainbridge, in a field on his estate near Crimple House, Pannal. The number of eggs shows that the bird had commenced laying about the middle of January, a circumstance rarely known even to the most experienced veteran sportsman, as it is not usual for Partridges to commence breeding till April or May.—*Id.*

Habits of the Kildee Plover (*Charadrius vociferus*, Wilson).—The flight of the Kildee is strong and rapid, and is at times protracted to a great distance. It skims quite low over the ground, or plays at a great height in the air, particularly during the love-season, when you may see these birds performing all sorts of evolutions on wing. On the ground their speed is such that it has become proverbial, and to "run like a Kildee" is to move with the utmost possible agility. Their ordinary posture when standing might be called stiff, were they not so beautiful in form and colouring. When pursued over a large space, they are able to lead you from one spot to another more than twenty times in the course of an hour; and the more you follow them the more shy do they become, until, wearied and hungry, as the Fox said of the grapes, you will probably begin to think them poor and insipid after all.

Now you see the Kildee wading in the water, and observe how it splashes it about. Down it lays itself, and with fluttering wings, seems to enjoy the sight of the drops trickling over its silky back. Now dripping and almost soaked to the skin, it retires to the warm earth, to dry its plumage, and clear it of insects.

While I was residing in Pennsylvania, the son of my tenant the miller was in the habit of catching newly-hatched birds of every sort, to bait his hooks. I had rather peremptorily remonstrated against this barbarous practice, although I believe without effect. One morning, I met him returning from the shores of the Perkioming Creek, with his hat full of young Kildees! He endeavoured to avoid me, but I made directly up to him, peeped into his hat, and saw the birds. On this I begged of him to go back and restore the poor things to their

parents, which he reluctantly did. Never had I felt more happy than I did when I saw the young Plovers run off, and hide under cover of the stones.—Audubon's *Ornithological Biography.*

Notes and Queries respecting the Ptarmigan.—On the 15th instant my attention was attracted to the shop of Mr. Fordham, poulterer, Berry-Street, by a vast number of white birds. I at first imagined they were Pigeons; but on going up to them I found, to my surprise, that they were Ptarmigans. In reply to a question, I was informed that they came from Norway, and that the enormous number of 2,572 had come to Liverpool. They were packed in boxes, in a completely frozen state. One was purchased by a gentleman, and presented to the Museum of the Royal Institution. In skinning it, I found the ice in scales where the legs are attached to the body; and on examination I found the intestines entirely frozen. I took the heart, and laid it open; the ice could be perceived in small particles all through it. On comparing the bird with Selby's description of the Scottish Ptarmigan (*Lagopus mutus*, Leach), I found it to be a female, being destitute of the black streak before and behind the eye. Selby says,—"The female in Winter plumage differs from the male in being without the black streak before and behind the eye, and also in wanting the red fringed membrane above the eye." The same writer states that the "bill and claws are black." My specimen differs from his description in having a broad red fringe above the eye; but what makes me doubt the black streak being a sexual difference, is, that out of all the number I saw on the 19th (about 200), only one had the black streak. (Do the females congregate in Winter?) They differ also from Selby's description in having the upper surface of the shafts of the primaries only partially black, the lower part as far as the ends of the coverts, about three-fourths of an inch at the points, and all the under surface, being pure white. The claws of the bird before me, where they are exposed, are of a clear horn colour, being only black where they are covered by the feathers. The tail likewise differs from Selby's description in having the end white. Is this a different species? or have they undergone a greater change from the severity of the Winter? The measurements of my specimen and those given by Selby agree.

Should the above, or any part of it, be considered worthy of a place in *The Naturalist*, its insertion will oblige.—Henry Johnson, *Seal-Street, Liverpool, March* 20, 1839.

The Common Fowl a Mouse-eater.—If the following incident is not of frequent occurrence, it may be interesting to your readers. The other day in going along a road near a farm yard, my attention was arrested by a large flock of hens pursuing with great avidity a common Field Mouse. Every now and then, as opportunity offered, they made a peck at it, but this produced little impression on the object of their pursuit, and he at length succeeded in getting into a crevice

behind a gate-post, where his vigilant pursuers stood around him anxious to renew the attack. A person who was present, drove the Mouse from his retreat, when the hens again commenced the chase; but as they seemed to make cruel work of it, the Mouse was killed for them, when they all surrounded it, and began to make a meal of its flesh. It was amusing to see the chickens in this hunt, who, although they joined the party, were evidently quite afraid of their victim, for if he accidentally turned round between their legs, they jumped up and ran away backwards, apparently in a great state of agitation. Mr. JOHN JENNINGS, jun., of Campsall, to whom the hens belong, assured me that this was not an uncommon scene, and that the hens always ate the Mice when they succeeded in killing them.—EDWIN LANKESTER, *Campsall, Yorkshire, March* 20, 1839.

INFORMATION ON THE EGGS AND NESTS OF BIRDS.—With reference to the wishes of "G. F." (p. 146), I much doubt whether an article on the general nidification of our British birds that could afford him the desired information, would be sufficiently interesting to the general readers of *The Naturalist*, as there must necessarily be a great sameness in the descriptions, since each locality must be described, which in some species is very various. The length of such a communication would, moreover, probably prevent its insertion in the pages of *The Naturalist*, which periodical is devoted to newer matter. I would recommend "G. F.," if he be not in possession of HEWITSON'S beautiful *British Oology*, to procure the two last 8vo. volumes, price £1 1s., of the letter-press to SELBY'S *Illustrations of British Ornithology*, where he will find the desired information. As for the localities, &c., they are accurately described in my friend Mr. YARRELL'S work, now publishing in parts, which ought to receive the support of every ornithologist desirous of possessing a complete work on British Ornithology.—J. D. SALMON, *Godalming, Surrey, Feb.* 19, 1839, *in a letter to the Editor.*

BOTANY.

"THE PRESENT BOTANICAL SYSTEM."—LINNÆUS, the naturalist, and the founder of the present botanical system, died on the 11th of January, 1778.—*Aldine Magazine, for February*, 1839.—[We know not whether the advocates of the "natural system" will feel complimented by the information that the Linnæan is "*the present system*" of Botany; but, certes, it might puzzle any botanist, amid the number of arrangements in existence, to point out "*the present system.*"—ED. *Nat.*]

BEET-ROOT SUGAR.—*The Aberdeen Constitutional* states that one of its correspondents has sent it a sample of sugar, made at Macduff, from Beet-root grown in Banffshire. It is retailed in London at 8d. per lb. The quantity is about a ton, but the manufacturer says that next season he shall be able to supply any quan-

tity. The sugar is well granulated, very dry, free from smell, particularly white, and tastes like sugar-candy.

Vegetable Origins.—Turnips and Carrots are thought indigenous to France. Our Cauliflowers came from Cyprus,—our Artichokes from Sicily,—Lettuce from Cos, a name corrupted into Gause,—Shallots, or Eschalots, from Ascalon. I had been reading on the subject, and was struck with the numerous ideas on commerce and civilization which may arise from a dinner. Will you have a dessert from memory? The Cherry and Filbert are from Pontus,—the Citron from Media, the Chesnut from Castana, in Asia-Minor,—the Peach and Walnut from Persia,—the Plum from Syria,—the Pomegranate from Cyprus,—the Quince from Cydon,—the Olive and Fig from Greece, as are the best Apples and Pears, though also found wild in France, and even here. The Apricot is from Armenia.—Horace Walpole.

GEOLOGY.

Effects of High Temperature.—In Dr. Mantell's *Wonders of Geology*, we find the following observations on this interesting subject:—

The phenomena presented to our notice in the investigation of the geysers [or hot springs] of Iceland, lead to the consideration of another agent in the transmutations that take place in the crust of the globe. It must be obvious to any intelligent mind, that beds of unconnected and porous materials have acquired hardness and solidity only by one of the following processes:—1st, by matter dissolved in a fluid, and consequently deposited among the porous mass in the manner just described; or, 2ndly, by their reduction by heat into a state of softness or fusion, and afterwards cooling into a solid mass.* Fire—or, to speak more correctly, high temperature, however induced, whether by electro-magnetic influence, or from a central or medial source of heat—and water are therefore the great agents by which the condition of the surface of our planet is modified. We have already seen how vast are the changes which result from the effects of the latter; we must now take a rapid survey of the influence which the former is capable of exerting; an influence far more universal, and varied, than we may at first be prepared to expect. The expansive power of heat on most substances, its conversion of the most solid and durable bodies, first into a fluid, and lastly into a gaseous state, are phenomena so familiar as to require no lengthened comment. But the effects of heat are found to vary according to the circumstances under which bodies are submitted to its operation, and hence the changes induced by high temperature under great pressure, are totally different from those effected

* Playfair.

by fire on the surface, under the ordinary weight of the atmosphere. A familiar example will best illustrate my meaning. Chalk consists of Lime combined with carbonic acid; and as for agricultural and other economical purposes, it is desirable to have the Lime in its pure state, the Chalk, or Limestone, is exposed to a great heat, in kilns erected in the open air, until all the carbonic acid is dissipated, and the Chalk is said to be burnt into quicklime. Now it may readily be conceived, that if this operation were conducted under such a degree of pressure that the gas could not escape, the formation of quicklime would not take place; the Chalk would be fused; the carbonic acid, released from its present relation with the calcareous particles, would enter into other combinations, and the mass when cooled would be wholly different from the product of the Lime-kilns, formed by the same agency in the open air. Experiments have proved that this opinion is correct. Sir JAMES HALL exposed pounded Chalk to intense heat, under great pressure, and it was fused, not into Lime, but crystalline Marble: and shells inclosed in the Chalk underwent the same transmutation, yet preserved their forms. That analogous changes have been effected by a similar operation in nature, we have abundant proof; but in this stage of our inquiry it is only necessary to remark, that where ancient streams of lava have traversed Chalk, the latter invariably possesses a crystalline structure. We shall hereafter find, in accordance with the beautiful and philosophical theory of Dr. HUTTON, that all the strata have been more or less modified by heat, acting under great pressure and at various depths; and that the present position and direction of the materials composing the crust of the globe, have been produced by the same agency.* The Huttonian theory, indeed, offers a most satisfactory explanation of a great proportion of geological phenomena, enabling us to solve many of the most difficult problems in the science; and it is but an act of justice to the memory of an illustrious philosopher, and of his able illustrator, Professor PLAYFAIR, to state that this theory, corrected and elucidated by the light which modern discoveries have shed upon the physical history of our planet, is now embraced by the most distinguished geologists.

[The above, we trust, will be considered a satisfactory reply to the queries of our Cheshire correspondent on this subject. Should he, however, require further explanation, we shall be happy to hear from him again.—ED.]

SYNOPSIS OF THE BIBLIOGRAPHICAL HISTORY OF GEOLOGY.—The first theory of Geology (by some called "Geognosy") deserving especial attention is perhaps that contained in the *Telluris Theoria Sacra*, by the Rev. Dr. BURNET. This eminent philosopher, however, indulged too much in the pleasures of imagination to merit much notice at the present day. The "elegant romance" of the worthy

* See PLAYFAIR'S *Illustrations of the Huttonian Theory*, Vol. I., p. 33, *et seq.*, Edinb., 1822.

divine was succeeded by Mr. WOODWARD's *Essay towards the Natural History of the Earth*, published in 1695, a more matter-of-fact work than that of Dr. BURNET, and consequently—though of less interest to the general reader—more valuable as a scientific treatise. This gentleman considered the Geology of MOSES strictly correct. In 1696 the learned Mr. WM. WHISTON produced his *New Theory of the Earth*. Early in the 18th century JOHN HUTCHINSON published his celebrated theory, confessedly derived exclusively from Scripture. The Italian Abbé MORO's opinions (1740) were mainly derived from the works of his Predecessor, RAY. Four years afterwards appeared M. LE CAT, the French philosopher; and in 1750 M. MAILLET published his *Tellianned*. This writer was followed by BUFFON, whose theory was warmly opposed by RASPE, a German geologist. In 1773 Dr. WM. WORTHINGTON promulgated a doctrine "in which great learning and piety and a considerable share of ingenuity are combined." Then followed, in 1778, WHITEHURST's *Enquiry into the Original State and Formation of the Earth*. Mr. W. was a native of Congleton, in Cheshire, and passed much of his time in Derbyshire. His writings are still considered valuable. A few years afterwards, M. DE LUC, of Geneva, dissatisfied with the then existing theories, added another, which gained a large share of attention at that time. Mr. MILNE, an ingenious theorist, who succeeded DE LUC, was but little noticed. But the two geological philosophers whose writings have acquired more celebrity than any of the authors above named, are Prof. WERNER, of Freiburg, and Dr. HUTTON, of Edinburgh, whose theories are well known as the *Wernerian* and the *Huttonian*.

The works of CONYBEARE, LYELL, SEDGWICK, PHILLIPS, MANTELL, BAKEWELL, URE, BUCKLAND, CUVIER, BOUÉ, &c. &c., in recent times, are well known, and contain all that has at present been discovered respecting the history of the earth.

The *Encyclopædia Britannica*, *Transactions of the Geological Society*, PARTINGTON's *Cyclopædia of Natural History*, and various other periodical works—containing contributions from the above and other eminent geologists—may likewise be consulted with advantage.

Geology has always been one of the most popular branches of Natural History; and the difficulty of the study demands, truly, that it should receive an ample share of the attention of philosophers.—ED.

John Lindley

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SOME ACCOUNT OF THE LIVERPOOL BOTANIC GARDEN.

By T. B. Hall.

In going through the Herbarium of the Liverpool Botanic Garden, for the purpose of obtaining information respecting the plants of that district, it occurred to me that a short notice of the Herbarium, as well as some account of the Garden, would not prove altogether uninteresting to the readers of *The Naturalist*, and I accordingly send you the rough notes which I made at the time, for your approval.

The Garden was established by public subscription, in the year 1800, and opened in 1803. The proprietors purchased about ten statute acres of land at a convenient distance from the town; rather more than one-half of them were appropriated to the "uses of the Garden, and such was the rapid advance in the value of property in the vicinity of Liverpool, that the sale of the portion which was not required nearly repaid the purchase of the whole." The disposition of the Garden was suggested by the late Wm. Roscoe, Esq.,* through whose zeal and active exertion in the dissemination of science, the encouragement of the fine arts, and the general improvement of the mind, this institution may be said to have been founded.

Liverpool may be considered a peculiarly favourable situation for an institution of this description, on account of the frequent and direct communication with different foreign countries, and consequently the facilities of transmission for seeds and plants. In 1824 Mr. Shepherd, the Curator, was the means of sending the Agricultural and Horticultural Society of Calcutta a splendid collection of English fruit-trees, the sum of £100 having been transmitted for that purpose by their Secretary, Dr. Wallich. A letter from the latter gentleman to Mr. Roscoe, dated "Botanic Garden, Calcutta, Nov. 20, 1824," states, that exactly 1,050 were,

* Mr. Roscoe, previous to the opening of the Garden, May 3, 1802, delivered before the proprietors his address, consisting of an introductory lecture on the pleasures and advantages to be derived from the establishment of public Institutions devoted to the study of Botany. This address—which is considered an elegant composition—was printed at the request of the proprietors, but it is now very scarce.

shortly after being transplanted, in full foliage, and some even in blossom. The rains, however, which had just set in, and which so powerfully assisted in invigorating the plants, soon commenced effecting a too powerful vegetation, and reduced them to little more than the tenth of the original number. Almost all the surviving trees were sold, and distributed to those parts of Hindustan and Nipal which held out the fairest prospects of their becoming naturalized. The Society, besides having contributed towards the introduction of a number of the most approved English fruits, and notwithstanding the woful diminution from the original number, made a profit over and above all the expences incurred on the occasion. An additional £100 was remitted for a further purchase, and Mr. Shepherd was presented with a silver medal for his services. On another occasion Mr. Shepherd received a present of a valuable diamond ring from the Emperor of Russia for his kind exertions in procuring a number of rare and beautiful plants for the Imperial Botanical Garden. A letter from Dr. Fischer to Mr. Shepherd, printed in one of the reports, contains a promise of a complete collection of Russian medals, which are said to form a very fine series.

Owing to the rapid extension of the town, it was determined at the general meeting of the proprietors, in January, 1831, to remove the site of the Garden, and they accordingly concluded a purchase with Mr. Leigh for six Derby acres, situated on the right-hand side of Edge-Lane, about two miles East of the Exchange. It comprises an area of 54,000 square yards, being about double that of the old site. The report states the Glasgow Garden to be of nearly the same area, the Manchester one to be one-half larger, the Edinburgh one nearly twice, and the Dublin one nearly three times the extent.

Among a long list of contributors to the Garden in the shape of plants and seeds, may be noticed the following names:—Dr. Wallich, of Calcutta, Dr. Carey, of Serampore, Dr. Fischer, of St. Petersburgh, M. Otto, of Berlin, Professor Sehmann, of Hamburgh, Dr. Traill, Dr. W. Hamilton, Rev. E. Stanley (now Bishop of Norwich), Mr. Hunneman, Mr. Tweedie, Robert Hesketh, Esq., C. Horsfall, Esq., C. S. Parker, Esq., &c. &c., as well as most of the provincial and metropolitan Horticultural and Botanical Societies.

From an average of four years, 1825, 1827, 1831, and 1832, the annual income of the Garden arising from subscriptions appears to have been about £1,000 per annum, but no reports have been published for several years past; and, from some cause or other, the same interest is not now taken in the Garden as formerly. The original shares are very much depreciated in value, and although a law has been passed for some time admitting annual subscribers of £1 with certain restrictions, this privilege is not taken advantage of to any extent. This falling off of the interest which was at one time taken in it, has been attributed to its removal further from the town; but as a much more advantageous situation

has been obtained, this ought to be considered as an advantage; and, moreover, the increased value of the ground forming the old site went a considerable way towards defraying the expenses of the removal.

A band used to be employed on certain evenings during the week, the same as is now done by the Manchester Garden; it formed a source of great attraction to the visitors, but it has been discontinued for the last year or two.

At the commencement of the establishment of the Garden, it formed part of the plan of the proprietors to add a library of works on Natural History, and a collection of specimens of dried plants, as appendages to the Institution. The foundation of the latter was laid by the purchase of the Museum of the late Dr. Forster, of Halle. This collection—which is one of the most interesting features of the foreign portion of the Herbarium—comprises many thousand specimens, collected by the Doctor and his son in the South-Sea Islands, and other foreign countries, and large contributions of plants from those illustrious botanists, Linnæus, Thunberg, Sprengel, Jacquin, and Pallas, with whom Dr. Forster was in correspondence. Most of the specimens collected by Pallas are from Siberia and the banks of the Volga, and have very interesting memoranda in Latin, in the hand-writing of Pallas. The principal contributors to the Herbarium are—Sir J. E. Smith, Sir W. J. Hooker, Mr. Swainson, Mr. Boot (principally North-American specimens), Dr. Buchanan, the Missionary (principally Nipal specimens), Mr. C. S. Parker (New Holland plants), Mr. Bearpark, Mr. E. Robson, Mr. Wright, Sir Thomas Gage, Mr. Smith (North-American specimens), Capt. Lace, Mr. A. Harrison, Mr. J. Haworth, and the following Manchester gentlemen connected with the Botanic Garden,—Messrs. Tomlinson, Phillips, Stanley, Law, Ackers, and Bridgeford. Mr. Aiton, of the Kew Gardens, was also a large contributor. The specimens contributed by Sir W. J. Hooker were collected by him when on a tour in Switzerland, and are mostly Alpine species, in a beautiful state of preservation. Mr. Swainson's specimens are gathered from the most classic spots in Greece; they are beautifully dried, but are not in every instance named. To show the spirit with which the proprietors commenced the Garden and Herbarium, it may be mentioned that they engaged Sir J. E. Smith to deliver a course of botanical lectures, and purchased specimens from him to the amount of £300. Amongst this collection are many of Sir James's duplicates from the Linnæan Herbarium—a nearly complete series of British *Salices*,—an interesting collection of Lichens,—specimens of the difficult genera *Rosa* and *Rubus*, and some Swiss plants collected by himself.*

On the occasion of Mr. Shepherd's death—which happened shortly after the

* They also sent out Mr. Bradbury, an excellent botanist, to collect for them in North-America; there are a great many of his dried specimens in the Herbarium, principally in Louisiana.

removal of the Garden to its present site—his collection was purchased and added to the Herbarium, after having been put up to public auction, and no buyer could be found. The bulk of it consists of dried specimens of foreign plants which have been cultivated in the Garden; and as cultivation effects such a change in the appearance of plants, they must be considered of little value for the purposes of reference. The native plants dried from the neighbourhood of Liverpool form a valuable addition to the Herbarium, although in the commoner species they are not near so complete as they might be made. The dried specimens of foreign Ferns, though mostly what have been cultivated in the Garden, are highly interesting, and very numerous. Mr. Mac Nab, of Edinburgh, has added largely to the Herbarium in specimens of Scotch plants; probably they formed part of Mr. Shepherd's collection. The most interesting portion of the collection of British specimens in the Herbarium, consists of those purchased from the widow of the late Colonel Velley, of Bristol, who was suddenly killed by a fall from a stage coach. They are most beautifully preserved, every leaf and leaflet having been laid out with scrupulous care; and in many instances the calyx, corolla, &c., are dissected and the different parts gummed down, with letters of reference. His numerous notes and interesting remarks, written in an extremely neat hand, show that he was ardently attached to the pursuit of Botany, and that he neglected no opportunity of following up his love of the science. He paid particular attention to marine plants, and it appears that he had excellent opportunities of collecting them, as many of the specimens are from Portsmouth, the Isle of Wight, and various other places on the coast. There are eight folio volumes filled with specimens of *Algæ*, *Confervæ*, and *Fuci*, laid down on large sheets of fine drawing-paper, and they are accompanied in many instances with drawings of a magnified view of the fructification in different stages. He devoted a great portion of his time to this subject, and contributed an able article to the *Transactions of the Linnæan Society;* and Mr. Henry Shepherd informs me that he had commenced a large folio work, some sheets of which were amongst his papers. This collection of marine plants, with drawings and notes, would prove invaluable in the hands of some botanist competent to avail himself of the information it contains. To the Grasses and other difficult departments of Botany, he appears to have devoted much attention; his notes on the Grasses are very numerous, and are accompanied by drawings.

Mr. Henry Shepherd, the present curator, succeeded his uncle, after holding the situation of sub-curator under him for many years; he is a Fellow of the Linnæan Society, is well acquainted with Botany, and cannot be too highly spoken of for his urbanity of manners and kindness in imparting information to all who desire it. He is possessed of an excellent library and herbarium, and assisted Mr. Roscoe in his splendid work on the *Scitamineæ*, the dissections of

the flowers having been all prepared by him, and they are in the herbarium very neatly mounted. The Messrs. Shepherd are justly known everywhere for their successful cultivation of foreign Ferns, a very high testimony of esteem having been paid them by Sir W. J. Hooker in his splendid work, *Icones Filicum*, and the collection made by the late Mr. Shepherd, will, I am sure, interest every botanist.

There is an interesting collection of plants from Jamaica, made by W. M. Wright, M.D., F.R.S., who "spent the best of his days in the West Indies, partly in his Majesty's service, and partly in private practice. He appropriated every spare moment from the duties of his profession to Botany. His chief aim was to ascertain the properties of plants, whether useful in Medicine, in commerce, the arts or rural economy."* Amongst the collection, which is bound up in a volume, are specimens of the following plants :—Indian Arrow-root (*Maranta arundinacea*), Black Pepper of Jamaica (*Piper Amalago*, *Piper inequale*), Lace-bark-tree (*Daphne lagetta*), Cinnamon-tree (*Laurus camphora* and *L cinnamomum*), Lignum Vitæ (*Guaiacum officinale*), several of the Sidas, or Mallows, of Jamaica, which appear to yield excellent hemp; specimens of it accompanying each plant; Nankeen Cotton (*Gossypium fuscum*), Peruvian or Jesuits'-bark of Jamaica (*Cinchona Caribæa*, *L. Sp. Pl.*, *C. Jamacensis*, *Ph. Tr.*, v. 67), Sweet Cassada (*Jatropha Janipha*), Cascarilla-bark-tree, Gum-Arabic-tree, &c. &c., all of the specimens being accompanied with highly interesting remarks on their properties and uses.

In concluding my notice of the Garden, I must not omit mentioning the library, which is well supplied with botanical works ; it contains,—*English Botany*, Loddige and Son's *Botanical Cabinet*, Curtis's *Botanical Magazine*, Andrews's *Botanist's Repository*, and his Monographs of the genera *Rosa*, *Erica*, and *Geranium*, Edwards's *Botanical Register*, Gærtner *De Fructibus et Seminibus Plantarum*, *Icones Filicum*, by Sir W. J. Hooker and Dr. Greville, Masson's (Francis) *Stapeliæ Novæ*, or Figures of several new species of that genus found in the Interior of Africa, *Flora Danica*, Roscoe's *Monandrian Plants of the order Scitamineæ*, *Plantæ Asiaticæ Rariores*, by N. Wallich, *Icones Plantarum Rariorum*, by N. I. Jacquin, *Plantæ Selectæ*, &c. &c., by G. D. Ehret, *Iconum*

* The above collection of plants is preceded by a few remarks which may prove interesting, as showing the high opinion their author entertained of the study of Botany :—"Botany is a study of such general importance to mankind, that no line can be drawn to bound its utility. In a commercial country like Britain, the advantages will appear great when we consider that her colonies and settlements are distributed throughout every climate of the world, as by this useful art the produce of foreign kingdoms may be transferred to our own dominions, whose climate and soil is best adapted for their growth. The botanist exercises his mind in the noblest because the most useful of all pursuits. His daily discoveries add to the stock of human knowledge, and his name is transmitted to future ages."

Rariores et pro-maxima-parte-novas Plantas, by C. F. Rottböll, *Hortus Malabaricus*, by John Hill. The names of Sir Joseph Banks, J. Stackhouse, and Sir J. E. Smith occur amongst the contributors to the library, and it contains nearly all the illustrated works (mostly in folio) published by Sir J. E. Smith. From the few titles of the works given, it will be seen that the library is rich in works of reference relating to exotic plants; it only requires the addition of a few modern works on British plants to make it very complete, and it would then be surpassed by few provincial botanical libraries.

There are two other excellent libraries in the town, the Athenæum and the Lyceum, both containing many valuable botanical works, as well as various works on the other departments of Natural History. They each contain a copy of *English Botany*, but they are all bound up as published, which makes them very inconvenient for reference, particularly in species belonging to an extensive genus; they would be much more valuable if bound up according to the Linnæan or natural system, so as to keep all the species of a genus together.

Coggeshall, Essex,
Feb. 28, 1839.

SKETCHES OF EUROPEAN ORNITHOLOGY.*

Gould's "Birds of Europe," Part I.

By Shirley Palmer, M.D.

(Continued from p. 356.)

In conformity with the pledge given in the last number of *The Analyst*, we proceed to analyse the splendid work of Mr. Gould on *The Birds of Europe*. The First Part, with which we shall commence, made its appearance in June, 1832, and has been regularly followed up, at intervals of three months, by the publication of its successors. Each part consists of twenty folio plates: the figures drawn upon stone, in a style of uncommon accuracy, and, in general, coloured with admirable taste, fidelity, and effect. The more striking peculiarities of plumage, which result from age or sex, are frequently illustrated by the introduction of two figures; and sometimes, although more rarely than we were led, from perusal of the Prospectus originally published by Mr. Gould, to expect, two or more of the species of a genus of the middle-sized or smaller birds are grouped

* In compliance with the wishes of several readers, we now proceed to complete the analyses of Gould's work, by republishing the critical notices of the early parts, from various numbers of *The Analyst*, written either by Dr. Shirley Palmer or by the Editor of this Journal.

together in a plate. In that Prospectus, Mr. Gould proposed that each part of his work should exhibit, on the average, *twenty-five* species. Hitherto he has failed in the performance of this important pledge. Fortunately, however, for his own credit and for the interest of his subscribers, the hour of redemption is not yet irrevocably past.

The analysis upon which we are about to enter will, ordinarily, comprehend the *specific* and, whenever the institution of new genera may require, the *generic characters* of each bird, as traced by Mr. Gould; and all the more novel or valuable information which may be gleaned from his accurate and masterly descriptions; the synonyms of the species in the English, Latin, French, Italian, and German languages; and occasional remarks on the new systems of ornithological arrangement and nomenclature, as proposed by modern writers, and more especially by an able, but anonymous, contributor to *The Analyst*; whose labours adorn our last and present numbers. The luminous descriptions of Temminck, and the iconographical productions of Selby, Werner, Meyer, and other of the more successful and celebrated delineators of the bird-class will also frequently be referred to.

Part I.—Presents a figure of the Lesser Kestrel, *Falco tinnunculoides*,—Faucon Cresserellette, *Fr.*—Falco di-terre-diverso, *It.*—Distinguished from the common European species, *F. tinnunculus*, by, 1st., the *extension of the wing to the extremity of the tail*; 2d., *absence of spots* from the superior part of the plumage; 3d., perfect *whiteness of the claws*; and 4th., marked and constant *inferiority of size*. The adult female, somewhat larger than the male, so closely resembles the female of *F. tinnunculus*, as only to be distinguishable by attention to the *first*, *third*, and *fourth* points of specific difference, above traced. She lays four eggs; differing little, in size and colour, from those of the common Kestrel. *F. tinnunculoides* inhabits the Southern and Eastern regions of Europe, and preys upon the smaller *Mammifera* and birds, but principally upon the larger species of Coleopterous and Hymenopterous insects, which it captures, with almost unerring precision of aim, upon the wing. No specimen of it has as yet been recorded as taken or seen in the British islands. The propriety of constituting a new genus, which, with the two Kestrels, shall include *F. rupicolus*, *F. spervarius*, and "several other species, of America and its adjacent islands," is cursorily adverted to by Mr. Gould. His figure of our present subject is admirably drawn and coloured. Werner's corresponding plate, given in the second *Livraison* of the *Atlas des Oiseaux d'Europe*, will not, for one moment, sustain comparison with it. Might not a more eligible specific designation than *tinnunculoides* be conferred upon this species; distinguished as it is, from its most nearly-allied congener, by greater length of wing, and whiteness of claw? This is a point too knotty for us to decide upon. We leave it, contented with having thrown out the mere hint, to

be settled by the zealous ornithological reformer of Derby, and the acute, but too bitterly "sarcastic, SENEX."

RED-FOOTED FALCON, *Falco rufipes* (Ingrian Falcon, and Orange-legged Hobby, of LATHAM,—*Falco vespertinus*, of GMELIN), le Faucon à-pieds-rouges, *Fr.*,—(*Variété singulière du Hobereau*,—singular variety of Hobby, of BUFFON),—*Falco barletta-piombina*, *It.*,—Rothfussiger Falk, *G.*—This fine species, previously known as principally inhabiting the Russian province of Ingria, where it is named Kobez, will acquire a peculiar interest in the eyes of the British ornithologist; since it is now formally recognized, from re-iterated instances of capture in our island, as a British bird. It is distinguished from all the other Falcons, and especially from the Hobby, to which it is most nearly allied, and of which BUFFON considered it a mere variety, by the *orange-red colour of its feet*. Hence, its specific designation is most apposite and unobjectionable: and the lucky bird, unlike certain other aspirant and predatory animal bodies exhibiting *orange members*, may set reformers and reform, and even the menaces of the great Philo-Hellenic HUME himself, at utter defiance. The plate exhibits specimens of an adult male and female, exquisitely drawn and coloured. The corresponding figure in WERNER's second number, although excellent, must at once succumb to the superiority of talent evinced by GOULD. *Omnia cedant* AURO.

THE KINGFISHER, *Alcedo ispida*,—Martin-pêcheur alcyon, Baboucard, *Fr.*—Gemeine Eisvogel, G.—It hath often strangely perplexed us to divine where and from whom this beautiful little creature acquired its specific designation. Time after time have we rumaged lexicons and other musty repositories of ancient lore in search of the unknown epithet: yet no such term as ἰσπιδος in the Greek, or *ispidus* in the Latin, has been found to reward our patient scrutiny. Peradventure, that profound ornithologist and erudite scholar, Professor RENNIE, should these humble pages be honoured with his glance, may commiserate, and deign to "enlighten our ignorance" on this subject. As *ispida* is the only European species of the *Alcedo* genus, we shall not pause to trace its specific characters. A more apt and significant designation might be surely taken from the bright and strongly-marked colours of the bird. The generic characters may be seen in TEMMINCK, *Manuel d' Ornithologie*, p. 418; SELBY, *Illustrations of British Ornithology*, Vol. I., p. 135; and GOULD's *letter-press* accompanying the plate. The genus *Alcedo* composes, with *Merops*, the seventh order, *Alcyones*, of TEMMINCK; and constitutes, alone, the fifth family, *Halcyonidæ*, of the British *Insessores*, of VIGORS and SELBY. The colouring of the Kingsfisher by Mr. GOULD, is as extraordinarily accurate, as soft and splendid. The figure, however, as regards the body of the bird, is unnaturally thick and clumsy; and by no means equal, in fidelity and spirit, to the more humble production of BEWICK's graver: nor is the attitude of the voracious little creature, silently watching over the stream for

its finny prey, in our opinion, so strikingly characteristic as that which has emanated from the genius-inspired hand of the rude and self-taught Northumbrian ornithographer.

The Goosander, *Mergus merganser*,—Grand Harle, *Fr.*—Mergo Oca Marina e Mergo Dominicano, *It.*—Gansensager oder Taucher-Gans, *G.*—This species, the largest of the genus, is the *Green-headed* Goosander of Fleming (the Merganser of other ornithologists); and should have a Latin specific designation founded upon this unvarying character of the adult male bird. The female differs from the male, not only in inferiority of size, in the rufous-brown colour of the head, neck, and crest, and less brilliant orange-red hue of bill, iris, and tarsus; but in the absence of those peculiarities of anatomical structure which the windpipe of the latter constantly exhibits. The respiratory tube of the *male* presents two enlargements previously to its termination in the bony labyrinth at what may be correctly termed its sternal extremity. The trachea of the *female* is alike destitute of such dilatations, and of the labyrinth. These marked differences of internal organization and of colouring, formerly led to the erroneous inference—still farther confirmed by the close resemblance which the plumage of the male, during the first year, exhibits to the plumage of the female—that the latter constituted a genus perfectly distinct from the *Merganser;* which hence became *Mergus castor* of the *green-headed* Gmelin—the Dun Diver or Sparling Fowl of Latham and other British ornithologists. Subsequent and more correct observation has served to rectify this perplexing error, and remove another stumbling-block from the paths of Ornithology. The Northern regions of Europe and America are the native and habitual haunts of this fine bird. On the approach of Winter it visits, in its migration Southwards, the Northern districts of our own island, and, more especially, the inland waters of Germany and Holland. Fishes, the smaller *Crustacea*, and molluscous animals, constitute its principal food. The female is said to lay from twelve to fourteen cream-coloured eggs: but of its nidification little is at present known. Mr. Gould's plate represents a male and female, two-thirds of the natural size, and most admirably executed.

The Whin Chat, *Saxicola rubetra*, *Rubetra migratoria*, Blyth,—*Motacilla rubetra*, Linnæus,—*Sylvia rubetra*, Latham,—Traquet Tarier, *Fr.*—Braunkehliger Steinschmatger, *G.*—A Summer-visitant of the British islands; hence the propriety of the specific designation *migratoria*, by which it is now distinguished from the only other British species of the genus, the Stone Chat, *R. rubicola*. It is, however, obvious that, whenever practicable, the specific name should be drawn, not from the habits of the bird uncognizable by the organs of touch or vision, but from some permanent and unerring peculiarity of exterior configuration or colouring, which the eye of the observer can at once discriminate. In what points, independently of its migratory habits, does the present subject of our

discussion differ from its congener, the Stone Chat? Principally in the broad streak, or band, of pure-white, which passes from the base of the bill, above the eye, nearly to the occiput. Why then not, at once, designate the bird *Rubetra albi-striata;* or give it any other more appropriate specific name indicative of this *visible* and unerring peculiarity of character? The plate of Mr. Gould, representing a male and female, of the adult age, is executed with his wonted elegance, talent, and felicity.

Missel Thrush, *Turdus viscivorus*,—Merle Draine, *F.*—Tordo maggiore, *It.*—Mistel Drossel, *G.*—This bird, the largest of the European *Turdi*, is principally distinguished from its congeners by the *grey colour of the space which exists between the eye and bill;* and instead of deriving its specific designation from habits neither universally practicable or prevalent, nor peculiar to the bird, should be distinguished by some aptly-constructed epithet, expressive of its character. *Temporo-griseus*, although not sufficiently precise, is the best which, at present, suggests itself to our mind. The absurdity of the ancient term is self-evident. Confine a cock-sparrow, and place him upon what the French physicians, whimsically enough, call *diète*—in plain English, put him on short commons—for a couple of days; and take our word for it, he will devour *Misseltoe*-berries as fast as you can procure, or his little stomach convert, them, with any *storm-cock* in his Majesty's dominions. The Missel Thrush of Mr. Gould, although boldly and correctly drawn, is not quite so softly and harmoniously coloured as many of the figures displayed in the preceding plates.

The Smew, *Mergus albellus*,—Harle Piette, *Fr.*—Mergo Oca minore, *It.*—Weisser Sager, *G.*—The male of this species, the smallest of the genus, is distinguished by its white pendant crest. The female, to which the young male, of the first year, exhibits a close resemblance, was once supposed to form a distinct genus, and entitled the Lough Diver, *Mergus minutus*. Anatomical inspection of the trachea of the young, shewed its identity of structure with that of the adult male, and exposed the fallacy of the opinion previously entertained. In this bird the windpipe displays a contraction immediately below the glottis; and then, gradually enlarging to the middle of its course, preserves nearly the same diameter to its termination in the lower larynx, which is proportionately smaller than in the other species of the *Mergus* genus, and very differently constructed. The Smew, or White Nun, is a Winter-visitant of the Southern and Eastern coasts of Britain, of the inland rivers and the waters of the fenny districts. The adult male, however, is rarely seen; and the female has never yet been known to breed among us. She is said to lay from eight to twelve whitish eggs. Stephens has, without sufficient reason, removed the Smew from *Mergus* to a different genus. Mr. Gould's figures, representing both male and female, two-thirds of the natural size, are finely executed.

The Wryneck, *Yunx torquilla* (*Torquilla striata* of modern systematists),—

Torcol ordinaire, *Fr.*—Torcicollo, *It.*—Wendehals, *G.*—The male and female of this elegant species, one of the earliest of our Summer-visitants, and the constant precursor of the joyous and welcome Cuckoo, are here represented with extraordinary spirit and effect. The female is seen emerging from the hollow of a tree, in which she may be supposed to have deposited her pure-white eggs. The only defect of the figures is, that they are considerably larger than natural. The principal food of this interesting bird—hence frequently termed the *Emmet* Wryneck—is the Ant and its larva; which are seized, with great velocity and unerring aim, by the protrusion of its long and extensile tongue. It is nearly allied, in structure and habits, to the Woodpecker genus.

The Magpie, *Pica caudata* (*Corvus pica*, of Linnæus,—*Pica melanoleuca*, of later ornithologists),—la Pie, *Fr.*—Gazzera commune, *It.*—Gartenkrahe, *G.*—Of this most beautiful of all the family of the British, or even European, *Corvidæ*, we have yet met with but one delineation, whether graven or drawn, true to the life. Turn, gentle reader, to the ninety-second page of the first volume of good old Bewick; and there you will behold the bold, impudent, and mischievous Pie, with tail erect, in all his glory. The representations of the bird by Lewin, Donovan, and Selby, are perfect failures. In the forlorn, sombre, sedate, and melancholy figure of Werner, we recognize, only by the aid of the appended type, the sprightly friend and associate of our school-boy days. Nor even with the Magpie of Mr. Gould, powerfully and splendidly coloured as it is, are we quite satisfied. The attitude of the bird is not natural; and there is some striking defect, more readily to be appreciated than particularized, in the form and colouring of the head. The expression of the bold, and bright, and wicked eye is, however, admirably given. *Pica*, although clearly distinguised by the illustrious Ray, having only of late been formally severed from the *Corvus* genus, we here present a sketch of the generic characters, as traced by Selby and Gould. *Beak* strong, compressed laterally, slightly arched, and hooked at the tip. *Nostrils* basal, open, protected by a covering of bristly feathers directed forwards. *Feet* with three toes before and one behind, entirely divided. *Tarsus* longer than the middle toe. *Wings* rounded. First quill-feather very short; fourth and fifth longest. *Tail* long, graduated; its two middle feathers projecting beyond the rest. The "saucy Madge" constitutes, at present, the only European species of the new genus. The specific designation, *caudata*, is obviously inapposite; as all the exotic congeners of our favourite Pie, we presume, sport tails. *Melanoleuca* will be also, probably, objected to, by the mere fastidious reformer, on the score of its Greek origin. Why, then, not substitute for it an equally expressive and more appropriate epithet derived from the Latin,—*Pica nigro-alba*, or *nigralba*, the Black-and-white Pie.

Plate x. comprehends two figures representing different species of the Red-

legged Partridge. These, with the Guernsey Partridge, *Perdix rufa*, and another nearly-allied species from the Himalaya mountains, present, in Mr. Gould's opinion, sufficient differences of character to justify their separation from the Linnæan genus *Perdix*—of which our common *P. cinerea* affords a familiar illustration—and the consequent institution of a new genus. In this view of the subject we are disposed to concur; and would recommend the adoption of the very apposite term *Rufipes*, or Redfoot—see page 206 of our present number—as designative of this newly-established and beautiful household of the distinguished family of the *Rasores*.

The *first figure* in the plate is the Barbary Partridge, *P. petrosa*, Latham, —*P. rubra Barbarica*, Brisson,—*Tetrao petrosus*, Gmelin,—Perdrix Gambra, la P. rouge de Barbarie, *Fr.*—Feldhuhn aus Barbarey, *G.*—This bird, resembling, in its habits, the Guernsey Partridge, inhabits not only, as its popular designation indicates, the coast of Barbary, but the European shores, and the islands, of the Mediterranean Sea. It is specifically distinguished from its congeners by the deep-chesnut stripe which, commencing at the root of the bill, passes over the crown of the head to the nape; and *by a rufous-brown collar which, thickly spotted with white points*, surrounds the neck. Hence, its proper designation would obviously be the Collared Redfoot, *Rufipes torquata*.

Greek Partridge, *P. saxatilis*, Meyer,—*P. Græca*, Brisson,—Perdrix Bartavelle, *Fr.*—Pernice maggiore, *It.*—das Steinfeld Huhn, *G.*,—forms the elegant subject of the *second figure*. It is a much rarer bird than either of the other two European Redfoots; inhabits the Archipelago, Turkey, Italy, Switzerland, and the Tyrol; and is principally distinguished by the *white colour* of the cheeks and neck, bounded by a black band which, passing on each side, from the beak across the eye, meets upon the chest. *Rufipes albicollis* would, consequently, form its appropriate designation. The male Greek Partridge measures, in extreme length, from thirteen to fifteen inches; the Barbary—, from twelve to thirteen. According to the admirable description of Temminck—*Manuel d' Ornithologie*, V. II., p. 484—486—both species occasionally exhibit considerable varieties of plumage.

The female of both may be readily recognized by inferiority of size; less vivid colouring of the plumage; and by the absence of the short blunt spur with which the tarsus of the male is invariably furnished. The Barbary, or Collared, lays fifteen eggs, of a dull-yellow, covered with minute specks of a greenish-yellow or olive colour: the Greek, or White-throated, from fifteen to twenty, yellowish-white, with indistinct markings of reddish-yellow. The figures in this plate are drawn with great fidelity and spirit; but the colouring of the feathers, on the sides and flanks, is rather hard.

Land Rail, or Corn Crake, *Gallinula crex*, *Rallus crex*, Linnæus,—*Ortygometra crex*, Fleming,—*Crex pratensis*, Bechstein,—Rale, ou Poule, d'Eau de

Genet, *Fr.*—Wiesenknarrer, *G.*—This migratory bird, whose harsh and monotonous cry becomes delightful from its association, in the memory, with the balmy and incense-breathing nights of Summer, is, by modern ornithologists, separated from *Gallinula;* with which we are surprised to find it still associated by Mr. Gould. The genus *Crex*, of which it is now taken to constitute the type, contains two other British species, *C. porzana* and *C. olivaria:* the Little Crake, *C. pusilla*, of Selby, having been transferred by Dr. Leach to the new genus, *Zapornia*. For a description of the generic characters of *Crex*, see Selby's *Illustrations*, V. II., p. 174. The Crakes, according to this excellent writer, form a connecting link between the *Rails* and *Gallinules:* distinguished, from the *former*, "by a shorter, thicker, and more angular bill;" from the *latter*, by the defect of extension of the lateral membrane bordering the inferior surface of the toes, and of the naked skin, or plate, which occupies the frontal region of the *Gallinule*.

The specific term *pratensis*, as indicative of circumstances of habitation, in which it does not materially differ from the other species of *Crex*, is not correctly applicable to the Land Rail. *Crepitans* or *strepera*, although probably not the most appropriate that might be devised, would be far more eligible than *pratensis*. Mr. Gould's figure, with all its excellence of colouring, is clumsily drawn, defective in the outline of the head and neck, and by no means so strikingly characteristic of the crouching and timorous bird as the coarse wood-cut of Bewick, Vol. II., p. 130.

Plate xii. is peculiarly interesting and important. It exhibits all the British species belonging to the genus *Sylvia*, as now constituted; and clearly illustrates the characters by which three birds, exceedingly difficult of discrimination, and hitherto frequently confounded, even by the experienced ornithologist, may at once be distinguished from each other.

The *first* of these is the Willow Wren, or Yellow Wren, *Sylvia trochilus* (*Motacilla trochilus*, Linnæus),—Bec-fin Pouillot, ou le Pouillot, *Fr.*—Fitis Sanger, *G.*—*Specific Characters*, according to Gould: whole of the upper surface, greenish-olive; a faint yellow streak above the eye; throat and breast slightly tinged with yellow; *belly yellowish-white;* under tail-coverts yellow; *legs dull flesh-colour; wings covering about one third of the tail.* Selby, in his description of this species—*Illustrations*, V. I., p. 226—has erroneously referred to the succeeding species in Temminck's work.

Second Figure.—The Chiff-chaff, or Lesser Pettychaps, *Sylvia* (*Motacilla*) *hippolais*,—Fauvette de-Roseaux, Petite Fauvette à-poitrine-jaune, *Fr.*—Gelebauchiger Sanger, *G.*—*Spec. Char.:* inferior in size to the preceding; eye-streak more faint; plumage less finely tinged with yellow; *legs of an umber or blackish-brown colour*. The Least Willow Wren, of Bewick, probably belongs to this species.

Third Figure.—The Wood Wren (Larger Willow Wren, White, Yellow Willow Wren, Bewick), *Sylvia sibilatrix*, *sylvicola*, Latham,—le Bec-fin siffleur, *Fr.*—Grüner Sanger, *G.*—*Spec. Char.: Wing extending nearly two-thirds of the length of the tail;* eye-streak bright-yellow; wing-feathers edged with yellow; *under surface silvery-white.* From the preceding outline, it appears that the *third* species, *S. sibilatrix*, is principally distinguished, from the *first* and *second*, by, a. the greater length of wing; b. the bright-yellow eye-streak; and c. the silvery-white of the abdominal plumage: and the *second*, *S. hippolais*, from the *first*, *S. trochilus*, by, a. the inferiority of size; b. fainter eye-streak; and c. the darker colour of the legs. The legs of the Wood Wren exhibit, like those of the Yellow Wren, a pale yellowish-brown hue.

All these species are insectivorous and migratory; and visit the British islands only in the Spring and Summer. The Chiff-chaff, so termed from its monotonous song, answering, in sound, to that name, arrives, first, in March; the Yellow Wren, about the beginning of April; the Wood Wren, a few days after. They are all ground builders. The nest, composed of dead leaves and Grass, is, by the two first birds, profusely lined with *feathers;* by the Wood Wren, invariably with *fine Grass and hair.* The eggs, from five to seven in number, of a white colour, speckled with purplish-red, or reddish-brown, more thickly at the larger end than elsewhere, are not readily traceable to their respective species. The spots of the Chiff-chaff's eggs, are, ordinarily, darker in hue and fewer in number than those on the Yellow Wren's. For the characters of the reformed genus, see Selby's *Illustrations*, V.I., 221.

Eared Grebe, *Podiceps auritus.*—Five European and British species of *Podiceps* are described by Temminck and Selby. Of these, the subject of the present admirably-executed plate, comprising figures of a young and an adult male, is one of the most rare and beautiful. *P. auritus* (*Colymbus auritus*, of Linnæus and Brisson),—Grebe Oreillard, *Fr.*—Colimbo Suasso Turco, *It.*—Geöhrter oder Ohren Steissfuss, *G.*,—is principally distinguished from its nearly-allied congener, *P. cornutus*, by the absence of the chesnut-coloured neck, and the rufous stripe which passes from the base of the biil, through the eye, to the occiput. The young, destitute of the long, silky, and radiating ear-feathers, from which the adult bird has acquired its specific designation, and of an uniform grey colour above, so closely resembles the young of *cornutus* that they have been confounded together, and regarded, by *dusky* ornithologists like Pennant, as a distinct species, under the title of *P. obscurus*, or Dusky Grebe.

Grey Wagtail, *Motacilla* (*melanops*, *sulphurea*, of older authors, *cinerea*, of the moderns), Bergeronnette jaune, *Fr.*—Gutrettola da Codizinzola, *It.*;—of which we have here two exquisitely-coloured figures, illustrative of the appearance of the bird in its Summer and Winter plumage. It strikingly resembles, in

its latter condition, the Yellow Wagtail, now separated from it, by removal of the last to the genus Oat-ear, *Budytes*. In Summer both sexes assume, with a brighter plumage, a circumscribed patch of black—not so intense in the female as the male—upon the throat. After the Autumnal moult, the black disappearing, is replaced by a yellowish-grey tinge. Yet, even in this state, the species may be distinguished from its former congener, by a more "slender and symmetrical" figure, the "grey colour of the back, and bright-sulphur hue of the rump." The Grey Wagtail, regarded as a British bird, is an *intra-insular* vagrant; not wandering, even in Winter, beyond the precints of our own island. It migrates to its Northern breeding-places in April; and, having achieved the important process of incubation, returns, about October, to the more genial regions of the South.

Golden-eye, *Clangula vulgaris*.—The male and female of this interesting species, the Golden-eyed Garrot,—*Clangula bimaculata*,—*chrysophthalma* of modern ornithologists,—(*Anas clangula* of Linnæus), Canard Garrot, *Fr.*—Anatra Canone Domenicano, *It.*—die Schelle Ente, *G.*,—are here depicted, two-thirds of the natural size, with uncommon fidelity of outline, and in an admirable style of colouring. Besides this there is only one other species, *C. histrionica*, of the newly-constituted genus. It is principally distinguished from its congener by the existence of a large white spot at the base of the bill, on each side; and has hence obtained the specific designation *bimaculata*, or two-spotted. The female differs widely in plumage from the male; and was once referred, with the immature bird of that sex, to a distinct genus, under the title of *Anas glaucion*, or Morillon. Anatomical inspection of the trachea, which is very singularly constituted, and exhibits, in the young and the adult male, perfect identity of structure, has served to rectify the error. This structure, of which even Temminck's description fails to convey a correct idea, is well illustrated by Latham's drawing—figures 1 and 2—in plate xv. of Vol. IV. of the *Linnæan Transactions*.

Grey-headed Green Woodpecker, *Picus canus*,—(*P. viridis Norvegicus*,—*viridicanus*,—*caniceps*, of various authors), Pic cendré, *Fr.*—Picchio verde di Norvegia, *It.*—der Grauköpfige oder Grungraue Specht, *G.*,—has very frequently been confounded with *Picus viridis*, the common Green Woodpecker of Europe; but may be distinguished from that bird by its rather smaller size, and the *grey colour of the head*; the red mark on the top of which is more circumscribed, while in the female it is entirely wanting. It inhabits the North of Europe, and —if Temminck's assertion, the accuracy of which is, however, questioned by Mr. Gould, may be relied upon—the corresponding regions of America. The figures of a male and female, of the natural size, are here admirably delineated. The

designation *viridicanus*, applied to this species, is, in our opinion, by far the most appropriate.

Sardinian Warbler, *Curruca melanocephala*,—Bec-fin Melanocéphale, *Fr.*, —is here represented in two figures, male and female, of the natural size. It is an inhabitant of Spain, Sardinia, and the Neapolitan dominions: insectivorous, and nearly-allied to our own melodious Blackcap. The head of the male is deep-black: that of the female, dark leaden-grey. The nest is formed in bushes near the ground; eggs, five in number, yellowish-white, with dark spots. An inspection of this charming plate confirms the impression which we were previously disposed to entertain, that, if possible, the smaller species of birds are more exquisitely delineated than the larger, by Mr. Gould. The species is referred to the genus *Sylvia* by Latham; by Gmelin to *Motacilla*.

Golden Plover, *Charadrius pluvialis*,—Pluvier doré, *Fr.*—Piviere dorato, *It.* —Goldregenpfeifer, *G.*—The Latin term, *pluvialis*, is now employed as designative of the Plover genus; and five British species—see p. 208 of our present number—are described as belonging to it. The subject of the present plate is the Green Plover—*Pl. viridis*—of modern ornithologists. The extraordinary change of plumage which the bird exhibits in the Summer and Winter seasons, is admirably illustrated in the two figures of the adult male, which Mr. Gould has here delineated with his wonted grace and fidelity.

Great Black Woodpecker, *Picus martius*, (— *niger*, Brisson,—*maximus*, Ray),—Pic noir, *Fr.*—Picchio Corvo, *It.*—Schwarztspecht, *G.*—This rare and beautiful bird, a native of North Europe, has been repeatedly killed in our own island; and at length, however tardily, been recognized by Selby as a British bird. It is the largest and most powerful of the European *Picidæ*. The prevailing colour of the body is deep-black; the crown of the head in the male—the occiput only in the female—"bright arterial blood-red." The figure of the latter, as partially represented by Mr. Gould, is excellent; that of the male, in our view, rather too angular and *scraggy* about the head and neck. *Nigro-coccineus* would form an appropriate specific designation for this bird.

Lesser Grey Shrike, *Collurio minor*,—(*Lanius minor*, Linnæus),—Pie-Grieche à Poitrine Rose (Rose-breasted Shrike) of Temminck,—Velia Genezia Mezzana, *It.*—Grauer Vurdur, oder Schwartzstieniger, *G.*—The modern genus, *Collurio*, is distinguished from *Lanius* by the graduated tail, and short rounded wing, of the species composing it. Our present subject is, however, regarded by Gould as rather forming a link between the two genera, than belonging strictly to either. In size it is inferior to *Lanius excubitor*; which it closely resembles in habits and general character of plumage. For the amusement and information of the reader, who may not have access to the *Manuel* of Temminck, we shall

transcribe, from that excellent work, the description of the bird. It will afford a fair example of the Dutchman's style, and be found to correspond well with the figures, as delineated by Gould; and by Werner in the seventh plate of the seventh *Livraison* of his *Atlas des Oiseaux d' Europe.*

"Forehead, region of the eyes, and ears, black; occiput, nape, and back, ash-grey; throat white; breast and flanks, of a rose-red; wings black; on the quills, only a white mark; first tail-feather white; on the second, black along the stem; on the third, a great black spot, terminated with white; on the fourth, a more considerable black spot, with an extremity of pure white; the four middle feathers perfectly black. Length, eight inches. The *female* has the rose-colour less bright, the black band of the forehead and ears more narrow; this band and the black of the wings verging more to brown.

"The *young of the year*, and *both sexes* after the Autumnal moult, do not exhibit the black frontal band. This part is, in Winter, of a dull ash-grey; after the Spring-moult, all the individuals have the black stripe, and the rose-colour of the breast is more vivid. The young of the year are, moreover, distinguished by the dull ash-grey of the superior parts, all the feathers of which are fringed, and by the dull-white of the lower parts.

"*Inhabits* the Archipelago, Turkey, Italy, Spain, and sometimes visits the North of Europe, as far as Russia; breeds also in some provinces of France and Germany, where the species is little diffused: very rare in Holland.

Food: Phalænæ, Scarabæi, Moles, Crickets, and the smaller birds. *Propagation.* Builds on forest-trees, and in bushes; lays six oblong eggs of a whitish-green colour, which have, towards the centre, a zone formed by minute points of an olive-grey."

Here our examination of the *First Part* of Mr. Gould's work terminates. A brief analysis, or recapitulation, of its contents may not be destitute of interest and utility to the ornithological student. The *twenty* plates of which it consists, comprehend representations of thirty-five figures, and twenty-three species, of birds, belonging to the seventeen following genera: *Alcedo*, *Anas* (*Clangula*), *Charadrius* (*Pluvialis*), *Corvus* (*Pica*), *Curruca*, *Falco*, *Gallinula* (*Crex*), *Lanius* (*Collurio*), *Mergus*, *Motacilla*, *Perdix* (*Rufipes*), *Picus*, *Podiceps*, *Saxicola* (*Rubetra*), *Sylvia*, *Turdus*, and *Yunx* (*Torquilla*). *Eighteen* of the plates represent one species each; and of these six, only one figure of the adult; and twelve, two figures: ten of the twelve exhibiting sexual, and the remaining two, seasonal—diversities of plumage. Of the *two* remaining plates, one illustrates two, and the other three—species. Seventeen of the species figured are British, and the remaing six, continental—birds. The analysis of Mr. Gould's work will be resumed in our next number.

Birmingham, Dec. 7, 1835.

ON THE VARIETIES OF BRITISH FERNS, AND THE DIAGNOSTICS OF ALLIED SPECIES.

By Thomas G. R. Rylands, Esq.

(Continued from p. 288.)

Asplenium viride.

Hooker's *Brit. Flo.*, 3rd Edit., p. 453; 4th Edit., p. 388.
Bolton's *Fil. Brit.*, p. 24, tab. 14.
Francis's *Ferns*, p. 39, pl. 3, fig. 5.
Withering's *Bot.* (MacGillivray), p. 383.

This plant in many points resembles *A. trichomanes*, though I know not that they have often been mistaken for one-another. It is easily distinguished by its rotundo-deltoid pinnæ, lighter colour, and green rachis; it is sometimes found with the rachis once or twice branched (*β. ramosum*, Auct.). Bolton mentions a "rare" variety in which "the lobes are sub-divided, and the sub-divisions elegantly crenated and lobed."*

Asplenium marinum.

Hook., *Brit. Flo.*, Edit. 3, p. 453; Edit. 4, p. 388.
Bolt., *Fil. Brit.*, p. 26, tab. 15.
Francis' *Ferns*, p. 37, pl. 3, fig. 3.
With. (MacGill.), p. 383.

In the specimens of this plant I have from Hulme Quarry—where it is now only found in a young state—the pinnæ are rather closer, broad, and more regularly crenate than in those from the coast. Is it so in the other inland stations?

Of Mr. Shaw's "much-divided" variety, I have not seen or heard more than Mr. Francis' note (p. 38. *Brit. Ferns*).

Asplenium adiantum-nigrum.

Hook., *Brit. Flo.*, Edit. 3, p. 453; Edit. 4, 388.
Bolt., *Fil. Brit.*, p. 30, tab. 17—1.
Francis' *Ferns*, p. 41, pl. 3, fig. 8.
With. (MacGilliv.), p. 383.

This has often been mistaken for *A. lanceolatum*, and *vice versâ*; I have as

* *Fil. Brit.*, p. 3, tab. 2, fig. 2.

yet seen no case in which it could not be easily distinguished by its larger bottom pinnæ, wedge-shaped pinnules, and single bundle of spiral vessels seen in a section of the stipes; in *lanceolatum* there are two bundles, the bottom pinnæ are smaller, and the pinnules ovate or obovate.

Specimens gathered at Barmoth, by Mr. Wilson, approach nearer *adiantum-nigrum* than any I have seen, but even in this instance they are easily distinguished by the characteristics above-mentioned. Bolton figures *lanceolatum* as a variety of this species.

Messrs. Wilson and MacKay find in Ireland a variety with linear pinnules. I have seen a specimen of it gathered in Cheshire; this has been considered by some as a drawn-up state. I have a frond intermediate between this and the common plant, which certainly has not much the appearance of being drawn up.

This species varies in size from two inches to eighteen.

Asplenium filix-fœmina.

Hook., *Brit. Flo.*, Edit. 3, p. 453; Edit. 4, 388.
Bolton's *Fil. Brit.*, p. 46, fig. 25.
Francis' *Ferns*, p. 42, pl. 3, fig. 10.
Withering's *Bot.* (MacGillivray), p. 382. (*Aspidium fil. fœm.*)

Mr. Francis mentions three varieties of this plant :—

β, rachis red, somewhat scaly;
γ, *(irriguum)*, pinnæ distant, and tender.
δ, Frond broad, and small; pinnæ and pinnules short, few, nearly white.

The only state of this species I have seen, differing from the common one, has a small (about eight inches) tender frond, primary pinnules on the upper margin very little larger, no broader, and no more auricled than their neighbours, smaller than those on the lower margin, which are in almost all cases remarkably bent out from the main rachis, covered with sori.

This I have always considered as *irriguum* of Smith; if I am wrong, I should feel obliged for the diagnostic of *irriguum verum.*

Scolopendrium vulgare.

Hook., *Brit. Flo.*, Edit. 3, p. 454; Edit. 4, p. 389.
Bolt., *Fil. Brit.* (*Asplenium scolopendrium*), p. 12, tab. 8.
Francis' *Ferns*, p. 43, pl. 3, fig. 11.
With., *Bot.* (MacGilliv.), p. 384.

There are two varieties of this species,—β. *crispum*, and γ. *multifidum*; the former of these is formed by a greater development of frond at the edges than

near the rachis; undivided at the top, always barren. In the other the frond is divided at the top; it varies much as to the number of clefts. I have seen it once, twice, thrice, and so on, until they become innumerable, mostly (always ?) fertile. It also divides at the base of the lamina, and has the appearance of 2, 3, or 4 much-cleft fronds arising from one stipe. This I have called *ramosum*.

Hymenophyllum Tunbridgiense.

Hook., *Brit. Flo.*, Edit. 3, p. 455; Edit. 4, p. 390.
Bolt., *Fil. Brit.* (*Trichomanes Tunbridgiense*), p. 58, tab. 31.
Francis' *Ferns*, p. 49, pl. 4, fig. 4.
With., *Bot.* (MacGilliv.), p. 386.

The two species in this genus were until lately considered the same, but as it was easy for even the "shallow courtier" to make the egg stand on its end after Columbus had done it, so in this case when the acute observation of one botanist has discovered their diagnostics, the others follow with ease, and express their surprise that "*it was so long unseen.*" The ease with which they are now distinguished is such as scarcely to warrant their insertion here. They are, however, allied species, and are thus distinguished:—

In *H. Tunbridgiense* the fronds are tender, the pinnæ pinnatifid, distichous, vertical; the involucrum sub-orbicular, compressed, spinuloso-serrate.

In *H. Wilsoni* the fronds are rigid, the "pinnæ cuneate, lobed (not pinnatifid),"* 4-6-lobed, recurved in a contrary direction to the fruit, involucrum ovate, entire, remarkably convex, the edges of the valves only coming in contact.

I have always considered Bolton's plate for *Trichomanes pixidiferum* as a barren frond of *H. Tunbridgiense*, both from its appearance and the place whence it was gathered (Dolbadon Castle, Wales); respecting his engraving he says, "I have been painfully correct;" and it is evident he was not acquainted with the plant he intended to figure, from what follows:—"No fruit ever found on this *phenomenon* of a plant." *Trichomanes* is at once known from our present species by its thick, dark, very hairy roots, and 3—4 pinnatifid frond.

Ophioglossum vulgatum is sometimes found with its frond more or less cleft at the top, but such variations are merely casual.

Lycopodiaceæ.

The species in this sub-order appear sufficiently allied to warrant our noticing each separately; the following diagnostics will be found easily to distinguish them.

Wilson in MS. Note.

Lycopodium clavatum.

Hook., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 391.
Francis' *Ferns*, p. 57, pl. 6, fig. 1.
With. *Bot.* (MacGilliv.), p. 387.

Spikes stalked, mostly double; leaves narrow, entire, and hair-pointed. Scales ovate, eroso-dentate.

The stems of this species grow a considerable length, and are beautifully branched. I have one specimen about twenty-one inches long, which in grace and regularity far surpasses all I have hitherto seen.

Lycopodium annotinum.

Hook., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 391.
Francis' *Ferns*, p. 58, pl. 5, fig. 2.
With., *Bot.* (MacGilliv.), p. 387.

Spike solitary, sessile; leaves linear-lanceolate, more or less serrated, in about five rows.

Scales broadly ovate, short.

Mr. Francis, in his little work, mentions Sir J. E. Smith's statement,—"That the scales of the spikes of one season, falling off, the stem thus left naked gives rise the following season to leaves, but these not being so numerous as the other parts of the plant, the stem acquires an interrupted habit." He then states that he cannot reconcile this with the appearance of his specimens, neither can I with the one in my possession, but should consider actual observation of living plants necessary before giving an opinion; I mention it only from information.

Lycopodium inundatum.

Hook., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 391.
Francis' *Ferns*, p. 57, pl. 5, fig. 3.
With., *Bot.* (MacGilliv.), p. 387.

Branches simple, with few leaves, which are narrow, and acute. Scales like the leaves, but more or less dilated at the base.

Lycopodium selaginoides.

Hook., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 392.
Francis' *Ferns*, p. 59, pl. 5, fig. 4.
With. (MacGilliv.), p. 387.

I know not how much this species varies in size and appearance, having only seen about five or six specimens, from Seaforth Common, near Liverpool, measuring

from half an inch to two inches: they are of a brighter colour than the other species, all in fruit; several of them appear to have formed small thick tufts, about one inch in height and diameter. PURSH mentions that the American plant is smaller than the British.

The leaves are ovato-lanceolate, ciliato-denticulate.

The scales larger, broader, deeply toothed, spinulose.

Lycopodium Alpinum.

HOOK., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 392.
FRANCIS' *Ferns*, p. 60, pl. 5, fig. 5.
WITH. (MACGILLIV.), p. 387.

Branches fasciculate, flat at the top.

Leaves in four rows, convex, oblong-acute, entire.

Scales in four rows, acute, broad at the base, sometimes with 2—3 teeth.

Lycopodium selago.

HOOK., *Brit. Flo.*, Edit. 3, p. 457; Edit. 4, p. 392.
FRANCIS' *Ferns*, p. 61, pl. 5, fig. 6.
WITH. (MACGILLIV.), p. 387.

This species may be known at first sight by its upright habit, and glaucous colour; it grows from 2—6 inches high, is branched dichotomously, flat at the top: the leaves are narrow, lanceolate, acute, arranged in eight rows, and the fruit is borne in their axils, on the upper half of the branches.

It is also sometimes viviparous, producing "curious petioled buds, which consist of three or four differently-sized ovate leaves; they are irregularly placed in the axils of the common leaves, that is, in the place of the capsules."*

This state of the plant I have never seen.

MARSILEACEÆ.

Isoetes lacustris.

HOOK., *Brit. Flo.*, Edit. 3, p. 458; Edit. 4, p. 392.
FRANCIS' *Ferns*, p. 56, pl. 4, fig. 11.

I introduce this to mention the two varieties found by Mr. WILSON, in Wales, namely,—one with densely-tufted, erect, slender leaves; the other, solitary, with broader leaves, widely spreading.

Sir W. J. HOOKER asks,—"May not the former be the *I.*, *setacea* of Bosc?"

* FRANCIS' *Analysis*, p. 61.

EQUISETACEÆ.

Equisetum Drummondii.

HOOK., *Brit. Flo.*, Edit. 3, p. 459; Edit. 4, p. 393.
FRANCIS' *Ferns*, p. 63, pl. 5, fig. 8.
WITH. (MACGILLIV.), p. 388.

Allied to *E. arvense*, but easily distinguished by its lighter, "less glaucous" ("*more glaucous*," FRANCIS) colour: its stem is also closely set with rough points; the sheaths are lighter in colour at the base than in *E. arvense*, but much darker at the extremity: they are also so close as to imbricate each other. The frond is also very blunt in its outline.

A state of *E. arvense* is sometimes found almost flat at the top.

Equisetum palustre.

HOOK., *Brit. Flo.*, Edit. 3, p. 459; Edit. 4, p. 394.
FRANCIS' *Ferns*, p. 66, pl. 5, fig. 12.
WITH. (MACGILLIV.), p. 388.

HOOKER recognises two varieties of this species:—

β (*Alpinum*), much smaller, with 4—5 angles, and teeth to the sheaths.

γ (*polystachion*), upper branches elongated, fertile.

Mr. FRANCIS states that the variety γ "is always found in such situations as to convince us that its peculiar formation arises from its being nipped by frost, or cropped by cattle, especially as when thus proliferous the main stem is almost always injured at the top." This may have been apparently the case, as in this variety, as far as I have observed, the terminary catkin has always shed its spores, and withered before the lateral ones are ripe: but I think, if found within reach, and carefully gathered, either itself or its remains will be visible, and that future observation will prove it to be a luxuriant state instead of a crippled variety. Mr. T. B. HALL sends a curious state of this species which has been mistaken by some for *E. variegatum*; this it resembles in being small, somewhat procumbent, and irregularly branched at the base; but is easily distinguished by the sheaths, which retain the characteristics usual in the species: the branches are numerous, and of various lengths; and altogether it has much the appearance of an injured state: it is found at Waterloo, near Liverpool.

Equisetum variegatum.

HOOK., *Brit. Flo.*, Edit. 3, p. 460; Edit. 4, p. 394.
FRANCIS' *Ferns*, p. 66, pl. 5, fig. 14.
WITH. (MACGILLIV.), p. 389.

I am not aware that this species when seen can be mistaken for any of the

others, though the former has been taken for it; its smaller size and recumbent habit at once distinguish it from *E. Hyemale*, except in the state found by Mr. Wilson in Ireland, respecting which he states, that when he gathered it, its appearance was so remarkable that he thought it might be specifically distinguished, and that it was not until a close and careful examination had proved the contrary, that he abandoned the idea: the stem of it is rounder, smoother, about 10-angled, the teeth not so much, or rather so constantly, acuminated; plant erect, 3—4 feet high; in water.

Bewsey House, Warrington,
March 15, 1839.

REMARKS UPON THE DIGESTIVE APPARATUS OF THE *INFUSORIA*.

From Müller's *Archiv für Anatomie, Physiologie, und Wissenschaftliche Medicin.*

By Professor Meyen.

(Communicated by Edwin Lankester, M.R.C.S.)

It is well known to naturalists that in the year 1781 Von Gleichen fed some *Infusoria* on carmine, and on the following day he observed that this appeared in the form of a number of red globules inside their bodies; from which circumstance he came to the conclusion, that the animalcules had swallowed the colouring matter. He also observed that the coloured matter was again rejected through special openings. Gleichen represented these little ingested red globules very regularly, and placed each inside an especial circle, without expressing himself as to their nature. More recently Professor Ehrenberg has prosecuted these inquiries, and comes to the conclusion, that the proper *Infusoria* possess a greater or less number of stomachs, which in one group are without intestines, but in the remainder are brought into union with each other by means of especial intestinal tubes; and sometimes they exhibit lateral pendulous blind intestines. In consequence of these discoveries, the *Infusoria* have received the name of *Polygastrica*. Ehrenberg believes himself to have observed, that these stomachs are filled successively, and he has drawn a number of intestinal canals, more or less perfectly, which are said to be situated between the circular stomachs and unite them together.

The accuracy of these views of Professor Ehrenberg has already been questioned by several observers. I have myself never participated in them, for these reasons:—First, I have not been able to discover the intestinal tubes or columns

which are supposed to unite the stomachs together; and secondly, many years since, I observed in various species of *Infusoria*, that the supposed stomachs in the inside of the same moved round with greater or less rapidity, in a manner quite similar to the globules in the rotatory motion of the cells of *Chara*. More recently I have often seen when the *Vorticella* has received from nine to fifteen balls of Indigo into its body, that they have turned continuously around a middle point, and have thus shewn very precisely, that here an intestinal column, which unites the stomachs with each other, having one end at the mouth and the other at the anus, can have no existence.

Then what are these nearly equal-sized globules and vesicles which are seen in the inside of *Infusoria*, and which have been considered as stomachs? This question will be generally asked, and I have put the same to myself, till, by continual observation, I have discovered the origin of these globules and vesicles.

The true *Infusoria* are vesicular animals, whose interior is filled with a mucous and somewhat saline substance. The thickness of the membrane which forms the vesicles is in some of these animals distinctly perceived; and in various species I have been able to observe, very clearly, in this membrane a perceptible spiral structure, so that in this view the fabric of these *Infusoria* appears to me to have on the whole a structure similar to that of the cells of plants. In the larger *Infusoria* there exists a cylindrical canal (digestive canal), which proceeds from the opening of the mouth obliquely through the membrane forming the animal; the lower end of this canal is more or less distended by the reception of food, and ordinarily to the extent of the globules which occur in the interior of the same *Infusoria*. The inside surface of this part of the digestive tube is covered with cilia, through whose motion the received matter, the food as well as foreign matters, are driven round in a circle with extraordinary velocity, till they are rolled together into a regular globule. During this formation of the globule, the stomach (for nothing else can this organ be considered) is open in connection with the digestive tube, and through the ciliary apparatus new matter is constantly driven into this canal and into the stomach; but whether the digestive canal between the opening of the mouth and the stomach is also clothed with cilia, I have not yet been able positively to observe.

At last the globule of received matter, having attained the size of the stomach, is pushed down to the other end of the same, and driven into the cavity of the animal; this is followed by the formation of another globule inside the stomach, if the surrounding fluid contain solid matter; this second globule is also driven into the cavity of the animal; and pushes now the first globule with the intervening mucus further on before it, and thus proceeds without cessation the formation of similar globules out of the ingested matter. These are the globules

from the multitude of which Prof. Ehrenberg inferred that a great number of stomachs existed in the animals. If the surrounding fluid contains few solid particles, the globules will be less firm, and they appear then in the manner in which they are observed in the *Infusoria* of ordinary uncoloured infusions, where sometimes such a globule presents only small individual particles, and consists for the most part of a mass of mucus, from which it has been rolled together. Sometimes two such globules in the interior of the body become so strongly pressed together through the strong contractions of the animal, that they remain together in combination.

To observe the formation of these globules in the best manner, the observation of them should be begun directly after the *Infusoria* have come in contact with the coloured fluid; the taking up of the coloured matter occurs very rapidly, often in the course of half a minute; then it can be noticed how one coloured globule after the other comes forth out of the stomachs perfectly formed; and how in the *Paramœcia*, *Cercaria*, and *Vorticella*, they are afterwards pressed under the inner edge of the cavity of the animal, and how the new globules press forwards the former with the intervening mucus, so that the first is elevated almost upon the inner wall of the opposite side; at the opposite end of the cavity it is turned round and again driven down on the other side; and thus the mass of globules continues to accumulate, even till each is pushed out at the anus. The number of globules is sometimes so great, that the whole cavity of the animalcule is filled with them, and they lie so near one-another, that they form together as it were one great ball, which frequently, as in the *Vorticellæ*, revolves slowly round its centre. This turning round arises, as I have perfectly assured myself, from the force with which the newly-formed globules in the stomach are driven into the cavity, and pushed against the under edge of the existing ball. In other cases, on the contrary, where few globules exist, there appears sometimes that circular movement of the same, of which I spoke at the outset; but it is not clear to me from what external cause this motion arises.

It is thus that the matter which the true *Infusoria* are able to take up, is brought into the form of a globule in the cavity of the body, and here the nutritive matter becomes absorbed out of these globules; the excrementitious matter is for the most part conveyed away by the very globules in which it entered; still sometimes the intervening mucus is absorbed, and the particles of the globules separate themselves in the interior of the body; but this only seldom occurs.

What then are these vesicular cavities, which often in so great numbers, and of such various sizes, move about in the interior of *Infusoria*? Stomachs they are certainly not; with the ingested globules of which we have been speaking, they have nothing to do, although sometimes the globules extend into these

cavities, which is only an accidental occurrence. The origin of the cavities, as well as their sudden and traceless disappearance in the saline matter, in the interior of the cavity of the animalcule, can be as easily perceived as the formation of one of those globules; and indeed sometimes the formation of such a cavity may be observed around the ingested globule, which again after some time disappears. The microscope shews that the cavities possess no special membranous walls, but consist of mere excavations of the saline substance; they also remain for the most part near the inner surface of the membrane which forms the skin of the animal, and sometimes increase so much in size, that the cavity of one of the vesicles will occupy from one-third to one-half of the cavity of the entire animal. That these cavities contain a thin and watery fluid, and are not at any time filled with air, is evident from the strikingly small refraction of the rays of light on their edges; and in the larger *Infusoria* it is very plainly seen that they have no external opening. Similar cavities are formed in the mucus of the cells of plants, and are especially frequent in the immersed *Confervæ*.

My botanical labours prevent my attending fully to these objects, but the preceding remarks may be sufficient to lead naturalists to the further investigation of a subject demanding great perseverance, for the leading facts are not to be seen immediately in every *Infusoria*; and these animals are sufficiently important, for already have the *Polygastrica* been received into all our new zoological works.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

By T. B. Hall.

(Continued from p. 349.)

Cakile.—According to Hooker, an old Arabic word applied probably to this or some allied genus.

Calamagrostis.—Καλαμαγρωσις, from Καλαμος, a Reed, and Αγρωσις, a genus of Grasses.

Cakile maritima, Sea Rocket.—It is a common annual on Sandy sea-shores, flowering from June to September, and making a very ornamental appearance. It abounds with alkaline Salt, and has the pungent mustard-like flavour of its class.

Calamintha.—From καλος, good, and Μινθα, Mint; a plant whose scent was supposed to drive away Serpents.

Calamintha officinalis, Common Calamint, Bawn.—The whole plant has a peculiarly sweet aromatic flavour, and makes a pleasant tea, especially mixed with smaller portions of Peppermint, Balm, or some others of the same natural family.

Callitriche.—Καλλίτριχον; from καλλος, beauty, and θριξ, hair, probably so named on account of its long and slender stems resembling hairs.

Calluna.—From καλλυνω, to cleanse, or adorn; which is doubly suitable, whether we take it to express a cleaning property, brooms being made of this plant; or whether we adopt the more common sense of the word, to ornament, or adorn, which is very applicable to the flowers.

Calluna vulgaris, Common Ling, Heather, or Grig.—This lovely gem, "whose modest bloom sheds beauty o'er the lonely moor," and almost every heath and barren open waste in Great Britain and Ireland, where the soil is Sandy, is applied to a great variety of purposes in the bleak and barren Highlands of Scotland, and other Northern countries. The poorer inhabitants cover their cabins with it instead of thatch; they also construct the walls of their cottages with alternate layers of Heath, and a kind of mortar, made of black earth and straw, the woody roots of the Heath being placed in the centre, and the tops externally and internally. The hardy Highlanders frequently make beds of it, laying the roots downwards, and the tops upwards. In most parts of Great Britain it is generally used for making besoms. The Grous and Heathcock feed upon the tender shoots, and on the seeds; and for this purpose the seed-vessel is so constructed as to retain the seeds for a considerable length of time, instead of discharging them as soon as they become ripe. The foliage affords nourishment to the caterpillar of the Great Egger Moth (*Phalæna Quercûs*). The Lesser Dodder (*Cuscuta epithymum*) is frequently parasitical on this plant, about which it entwines itself, giving it an appearance which may puzzle, if not mislead, the inexperienced botanist. The Ling is the badge of the Scottish clan Macdonell. There is a white-flowered variety; and a very beautiful red one, cultivated in gardens, whose flowers, from a copious multiplication of the corolla, resemble little Roses.

Caltha.—From καλαθος, a cup, which its flowers resemble; or corrupted from καλχα, yellow, on account of the colour of its flowers.

Caltha palustris, Marsh Marigold, Meadow Bout.—The flowers, gathered before they expand, and preserved in salted vinegar, are a good substitute for capers. The juice of the petals, boiled with a little alum, stains paper yellow, but the colour so produced is said not to be permanent. It has been conjectured, that the yellowness of butter in the Spring is owing to the cattle having fed on this

plant; but Cows will not eat it unless compelled by extreme hunger, and then, BOERHAAVE says, it occasions such an inflammation that they generally die. On May-day country people strew the flowers of this plant before their doors, and wreath them in their garlands. In Lapland it is the first flower that announces the approach of Spring, although it does not appear there till the end of May. The Scottish name, *Gowlan* or *Gowan*, though indiscriminately applied to several Spring flowers, is generally understood more particularly to designate the Daisy, Dandelion, Crowfoot, and Meadow-bout; thus "Gowany glens" has been interpreted "Daised dales;" and with like reference BURNS—

> "We twa hae run about the braes,
> And pu't the Gowans fine."

Few plants will be found more ornamental on the margin of the pleasure-ground lake, wherein the rich golden blossoms are often reflected with admirable effect. A double-blossomed variety is admitted into gardens, and has occasionally been found wild.

Camelina.—From Καμηλος, a Camel, but the appropriate meaning is not very intelligible. According to HOOKER it is named from χαμαι, dwarf or humble, and *Linum*, Flax.

Camelina sativa, Gold-of-pleasure.—It is cultivated in Germany for the sake of the expressed oil of the seeds, which the inhabitants use for medicinal, culinary and economical purposes; but Sir J. E. SMITH remarks, that the ridiculously pompous English name seems a satire on the articles of which it is composed, as yielding nothing but disappointment. The seeds are said to be a favourite food with Geese.

Campanula.—Diminutive of *campana*, a bell, so named from the bell-shaped corolla.

Campanula rotundifolia, Round-leaved Bell-flower, Heath-bell, Witches'-thimble.—Botanists differ in opinion as to whether this plant or *Scilla nutans* lays claim to the title of Blue-bell. WITHERING, and likewise HOOKER—who on this point must be a good authority—consider that *Scilla nutans* is the Blue-bell, and that *C. rotundifolia* is the Hare-bell; and in support of their opinion quote the well-known lines—

> "E'en the light Hare-bell raised its head,
> Elastic from her airy tread."

BAXTER in his interesting notes on this plant states that Dr. JOHNSTON, in his excellent and interesting *Flora of Berwick-upon-Tweed*, has proved that the present plant is the true Blue-bell of that country.

Campanula latifolia, Broad-leaved Bell-flower, Giant Throatwort.—The beauty of its flowers frequently procures it a place in gardens. Sir WALTER SCOTT, in his poem of *Rokeby*, describes this

——— "Throatwort with its azure bell,"

as adorning the banks of the Greta, where it divides the manors of Brignell and Scargill. The whole plant abounds with a milky liquor. The young shoots, stripped of the skin, are sometimes boiled and eaten as greens.

Campanula trachelium, Great Throatwort, Canterbury-bell, Nettle-leaved Bell-flower.—The bristles of the leaves are often as pungent as those of a Nettle, though not venomous. The name *trachelium*, from τραχηλος, the neck, alludes to the reputed virtues of this plant in disorders of the throat, to which the other appellations of old authors allude. A decoction of the herb, which is bitter and somewhat acrid, was formerly used as a gargle.

Capsella.—Diminutive of *capsa*, a chest, or box, so named from the resemblance of its seed-vessel.

Capsella bursa-pastoris, Common Shepherd's-purse.—De Candolle observes that this plant is much less acrid than the rest of its order, and that it is rather glutinous to the taste. Small birds are fond of the seeds and flowers. Sir James Edward Smith remarks, that it occurs in almost every part of the globe, and that to the various and distant countries mentioned by De Candolle, he could add Nepaul, from whence he had received specimens through the kindness of Dr. Wallich.

Cardamine.—Καρδαμινη, from καρδια, the heart, and δαμαω, to fortify: on account of its supposed strengthening qualities.

Cardamine pratensis, Meadow Ladies'-smock, Cuckoo-flower.—The flowers appear about the same time with the Cuckoo, whence it is called the Cuckoo-flower; and their covering the meadows as with linen spread out to bleach, is supposed to be the origin of the other English name, now extended to the whole genus. They are associated with pleasant ideas of the Spring, and join with the White Saxifrage, the Cowslip, Primrose, and Hare-bell, to compose many a rustic nosegay. Shakespere's Cuckoo-buds are yellow, and supposed to be the wild Yellow Ranunculus. He expressly distinguishes his Cuckoo-buds from this flower—

> "When Daisies pied, and Violets blue,
> And Lady-smocks all silver white,
> And Cuckoo-buds of yellow hue,
> Do paint the meadows with delight."

Carduus.—From κειρω, to abrade, from its roughness. Theis derives it from *ard*, in Celtic, a point; whence also, according to Hooker, αρδος, in Greek; *arduus*, in Latin.

Carduus lanceolatus, Spear Thistle.—Few plants are more disregarded than this, and yet its use is very considerable. If a heap of Clay be thrown up, nothing would grow upon it for several years, did not the seeds of this plant,

wafted by the wind, fix and vegetate thereon. Under the shelter of this, other vegetables appear, and the whole soon becomes fertile. The flowers, like those of the Artichoke, have the property of curdling milk.

Carduus arvensis, Creeping Thistle, Way Thistle.—Is is said to yield a very pure vegetable alkali when burnt, suitable either for bleaching linen or the manufacture of glass. The down of the various species is sometimes used as a material in making paper. Flocks of Goldfinches, the united produce of the Summer months, throughout October may be observed sporting and glistening in the sunny beam, aiding the breeze of Autumn in scattering the down (the proverbially "light as Thistle-down"), as they busily pick out the seeds for their favourite repast. The Painted Lady (*Cynthia Cardui*) and the Thistle Ermine-moth feed upon it; the woody galls observable on these plants are occasioned by the two-winged Flies *Tephritis Cardui*.

Carex.—From κειρω, to abrade, on account of its roughness.

Carex paniculata, Great Panicled Carex or Sedge.—Ray, and others who have accurately observed this species, remark that it forms large dense tufts, like those of Rushes, safely to be walked upon, which is not the case with some of the other species. By this mode of growth it gradually changes the most rotten bogs into profitable meadows, capable at length of producing better herbage.

Carex stricta, Straight-leaved Carex or Sedge.—Mr. Davall observes that this plant, by means of its matted roots, forms islands in the Swiss pools or lakes, probably like the tufts of *C. cæspitosa*,* on a large scale.

Carlina.—The same as Carolina, said to have been indicated to the Emperor Charlemagne (or as some authors have it to Carolus, Charles the Great), by an angel, for the cure of his army afflicted by the plague.

Carlina vulgaris, Common Carline Thistle.—The flowers expand in dry, and close in moist weather; and as they retain this property for a long time, they may be employed as hygrometers. The divergent tuft with which the seeds are crowned, and by which they are wafted through the air, did not escape the notice of Ossian, who, like other genuine poets, was an accurate observer of the most trivial phenomena, and who fancifully describes the "zephyrs sporting on the plain, pursuing the Thistle's beard."

Carpinus.—Καρπινος, from καρπω fruit, on account of its abundance in fruit; or from *car*, wood, and *pin*, a head, in Celtic; it having been the wood employed to make the yokes of oxen.

Carpinus betulus, Horn-beam or Hard-beam (Witch or Wych Hasel of Essex).—Hornbeam loves a poor stiff soil, on the sides of hills, is easily transplanted,

* *Carex cæspitosa* is well known in Sweden for its singular property of filling up boggy ground, changing it eventually to green meadow, of which Linnæus gives a remarkable account, *Fl. Suec.*, Ed. 2, 333.

and bears lopping, from which practice it suffers such general mutilation that it is rare to behold a perfect tree. In 1764, in Lord PETRE's park, at Writtle, in Essex, stood a Hornbeam-tree measuring full twelve feet in girth, at five feet above the ground. Cattle eat the leaves, but pasturage will not flourish in its shade. The wood burns like a candle, being highly inflammable, as was well known to the ancients—

"*Carpinus tædas fissa faces-que dabit.*"

It is very white, tough, harder than that of Hawthorn, and capable of supporting a great weight. It is useful in turning, and for many implements of husbandry, especially celebrated for yokes for coupling oxen, and therefore designated ζυγια, *juga* (*q. d. conjugalis*), by the Greeks and Romans. It makes cogs for mill-wheels, even superior to Yew. The inner bark is much used in Scandinavia to dye yellow.

Carum.—From Caria, a district of Asia-Minor, from which the seeds may have been imported as an article of commerce.

Carum Carui, Caraway.—The tender leaves may be boiled with potherbs, and were probably considered dainty fare in the olden time, for with some such treat did Justice SHALLOW entertain FALSTAFF—

> "Nay you shall see mine orchard, where, in an arbour, we will eat a last year's pippin of my own grafting, with a dish of Caraways."
>
> SHAKSPERE's *Hen. IV.*

The seeds are used in cakes; incrusted with sugar are called caraway comfits; and are distilled with spirituous liquors for the flavour they afford.

Castanea.—From Καστανις, a town in Thessaly, the neighbourhood of which abounds with these trees. In Latin, *Castanea;* Italian, *Castagno;* Spanish, *Castano;* French, *Chatagnier;* and English, in declension, and by the more ancient orthography, Chesnut.

Castanea vulgaris, Spanish Chesnut.—The Chesnut may well be considered as one of the most stately of European trees, exceeding the Oak in height, and equalling it in bulk and extent. "Being planted in avenues to our country-houses, they are a magnificent and royal ornament; and although our Englishmen delight not so much in the fruit as other nations, yet will they yield no small advantage to supply our other occasions." The foliage exhibits a more marked character than that of the Oak, being formed into stellate clusters, glossy, less liable to depredations from insects, and peculiarly elegant when surrounded by the florescent catkins. "This is the tree," observes GILPIN, "which graces the landscapes of SALVATOR ROSA. In the mountains of Calabria, where SALVATOR painted, the Chesnut flourished. There he studied it in all its forms, breaking and disposing it in a thousand beautiful shapes, as the exigences of his composition required. I have heard, indeed, that it is naturally brittle, and

liable to be shattered by winds; which might be one reason for SALVATOR's attachment to it."

Whether the Chesnut may be accounted an aboriginal of the British Isles, or merely introduced at a remote era, has long perplexed the most experienced dendrologists. There is certainly no indication of the Chesnut ever having prevailed in North Britain, nor has it latterly been observed in the Southern portion of the island, except in parks and artificial plantations. The wood is applicable to the same uses as that of the Oak, but less valuable, as it is apt to be shaky and given to separate. Notwithstanding it is bought for the purposes of cooperage and water-pipes, not being liable to shrink after it is once seasoned, nor to change the colour of the liquor it contains. Dr. HUNTER affirms that posts made of it are more durable than Oak. The nuts are used for whitening linen cloth, and for making starch. They are roasted on small stoves in the streets by fruit-women in the South of Europe, and there constitute a great proportion of the food of the common people. In Winter they form a very agreeable addition to our desserts. Various are the modes of preparing this fruit for the table, as related by EVELYN. When roasted they formerly accompanied the wassail bowl at our Christmas festivities. Deer are fond of chesnuts; hence they are sometimes called Buck-mast, and the flesh of Hogs feeding upon them as they run wild in the forests, is reckoned particularly excellent.

COMPARATIVE PHRENOLOGY.

BIRDS.

BY J. L. LEVISON.

IN introducing to the readers of *The Naturalist* the fertile subject of Comparative Phrenology, I would request their attention to a few well-ascertained observations:—1. Comparative Anatomy demonstrates, that the brains of animals are differently formed whenever there are any marked differences in their disposition, temper, or intelligence. Thus, when there is manifested very little, if any, individual consciousness, the actions being more automatic than voluntary, the brain is extremely simple; but when animals indicate positive mental perception, so as to direct in a voluntary manner their own actions, the brain is more complex in its parts, and more amplified in volume.—2. These statements are easily corroborated, by observing the constancy of particular forms of brain with certain affective and intellectual faculties, and are valuable not only to the zoologist, but to the physiologist, as they verify the truth of Phrenology, and

shew its importance in explaining the philosophy of the habits and instincts of animals.—3. However, it should be remembered, that there are greater difficulties to contend with in the study of Comparative Phrenology, than when examining a number of human heads or skulls. Yet patient and careful observation will reward the inquirer for any trouble he may incur. He will have accurate and sound physiological *data*, and a definite vocabulary; and he will then not be obliged to use the ambiguous term *instinct*, to designate in animals all their feelings and propensities, as well as their various perceptive powers. He will not, therefore, confound actions which are impulsive or affective, with others which are discriminative and intelligent. Having obtained a correct knowledge of the attributes of animals, in connection with their cerebral organization, and the relative position of the groups of faculties, his task is both satisfactory and interesting. The social and domestic propensities are located, as in Man, in the occipital region; the prudential at the base, and the intellectual in the forehead. If we examine the *crania* of any one genus, it will soon be recognized that there is a certain general configuration, and when the departure from the standard is more or less great, we have positive and natural *data* for species and varieties. Warblers, for example, have all rounded foreheads, amplified in the degree of the musical capacity; but the Nightingale presents a striking difference to the Blackcap, although they resemble each-other in melodious power. They are both full in the regions of Melody and Time, but the Nightingale is broad at Cautiousness, which might be anticipated, from its solitary and timid habits, whilst the Blackcap is more friendly, and indicates much less breadth of head in the region of Cautiousness.

It may be worthy of remark, that in our attempts to ascertain the mental faculties of animals by means of their cerebral organization, there are found many difficulties; but the skulls of birds form an exception. Quadrupeds, for instance, carry their heads in an horizontal position, sustained by very powerful muscles and ligaments, inserted in a ridge of bone at the back of the skull, and which in some measure is an obstacle in ascertaining the character of animals during life, as the external skull does not indicate the form of the brain enclosed within it. With the skulls of birds we have less difficulty, as they are the exact shape of the brain within them, and the bones are so fragile, that very often they are not thicker than a sheet of writing-paper. Hence the form of the skull is seen to be the fac-simile of the brain within.

I may mention a very interesting fact in proof of this. A gentleman one day visited my museum, and I was examining and arranging the birds' skulls. He looked at them, and then not only pointed out the Warblers, Divers, Waders, &c. &c., but also distinguished the species. And this, be it observed, by no factitious aids, the skulls having been deprived of their integuments and feathers,

by means of maceration. Hence it is that the *skull* will be ultimately the best index for distinguishing, by much more definite means than the beak or the feet, the genera and species of birds. In other words, the shapes of skulls, indicating the form and volume of the brain within them, will enable us to decide on the mental qualifications of birds, because we are thus made cognizant of their cerebral organization.

There is a greater difficulty in distinguishing the species of birds by a casual glance at their heads and plumage to the *tyro* in Ornithology, than when we compare their skulls together; yet when once the latter *desideratum* is obtained, we proceed with greater certainty: as, by the latter mode of study, we ascertain the cerebral condition of any marked difference in the habits or mental capacity of birds, and are not merely learned in names.

The other day I visited the excellent museum of Mr. Hugh Reid, of this town, and I had an opportunity of examining a great number of birds. But for the present I will only mention the Woodpeckers. They have a well-marked difference of form of skull in each species, indicating some modification in their habits; hence, supposing I had forgotten the name of any one of them, if the specific term had been adopted from some mental difference, instead of the accidental difference of size or plumage, then the instant the skull or head was shown me, all the particulars would be remembered, as well as the name by which it was distinguished. When attention is given to *things* rather than *words*, and the latter are used only as conventional media of communication, and deemed valueless unless we know the definite meaning associated with them, then there will be a more philosophical mode of arranging animals. If the

"Mind's the standard of the Man,"

then also we should use the mental differences of the lower animal in distinguishing them.

In concluding this mere introductory paper, I would call attention to the following general facts:—1st, That birds of prey are broad from ear to ear, having a similar configuration of skull, as is observed in Carnivorous animals, being large in the regions of Combativeness and Destructiveness; and that it is possible to decide by the skull whether they are very courageous, and open enemies of their victims, or cunning, savage, and treacherous. 2nd, That timid birds (like cautious quadrupeds) have the middle part of the parietal bones broad, indicating a large development of Cautiousness. 3rd, That building-birds show more or less ingenuity in their nests in proportion to the development of Constructiveness and the perceptive faculties: and that they present a striking contrast when placed in juxta-position with birds which do not build.

In my next paper I will illustrate these statements with some interesting facts, in proof of their correctness.

Doncaster, April 5, 1839.

(To be continued.)

CORRESPONDENCE.

Dates of the Appearance of Spring Flowers, and Notes on Natural History in general.

To the Editor of The Naturalist.

Dear Sir,—I am tempted by the opportunity of going to town, to leave the following dates of the first appearing of Spring flowers, and the earliest notes of the Thrush and other birds in this neighbourhood, at your London publishers. They have been marked down by myself as they occurred; my plan being during my daily rambles in the fields to seek for something worthy of observation, and to note it on my return home. It employs the mind whilst walking, and leads one to see "in the vast and the minute"—

> "The unambiguous footsteps of the God
> Who gives its lustre to an insect's wing,
> And wheels his throne upon the rolling worlds."

Should any one of them be worthy of notice in *The Naturalist*, pray accept them; if not, you are at liberty to burn them.

Common Daisy (*Bellis perennis*), first seen, Jan. 12.—Dandelion (*Leontodon taraxacum*), Jan. 12.—Rooks (*Corvus frugilegus*), on their old nesting-trees for the first time, in numbers, Jan. 13.—Herons (*Ardea major*), first flight visited the Herony at Diddlington, Jan. 18.—Water Beetles, Plungers (*Dytiscus marginalis*), pairing at the bottoms of ditches, &c., Jan. 23.—Caddis, Case-worms (*Phryganea arenaria*), slowly moving in water-runs, Jan. 23.—Blackbird (*Turdus merula*), whistling, Feb. 3.—Missel Thrush (*Turdus viscivorus*), Feb. 6.—Snow-drops (*Galœnthus nivalis*), first seen, Feb. 3.—Thrush (*Turdus musicus*), first song, Feb. 7.—Bats (*Verpertilio pipistrellus*), seen flying, Feb. 7. —*Gyrini*, or "Merry-go-rounds" (*Gyrinus natator*), circling in the waters, Feb. 9.—Starlings (*Sturnus vulgaris*), in pairs, calling, Feb. 10.—Hedge-sparrow*

* We presume the Hedge Dunnock, *Accentor modularis*, is here alluded to. It is frequently

(*Fringilla montana*), whistling, Feb. 10.—Larks (*Alauda arvensis*), soaring and singing, Feb. 10.—Elder-leaf sprouting, Feb. 12.—Partridges (*Tetrao perdix*), in pairs, Feb. 13.—Honey-suckle, or Woodbine, sprouting, Feb. 12.—Mezereon, flowering in gardens, Feb. 19.—House Sparrow (*Fringilla domestica*), building, Feb. 23.—*Pyrus Japonica*, in gardens, first flowering, Feb. 23.—Blackbirds, building, Feb. 24.—*Aranea palustris*, above ground, Feb. 28.—"Lords-and-ladies" (*Arum maculatum*), shooting up plentifully on the banks of hedges, Feb. 28.

Coldest day in February, the 18th. Thermometer at 26° seven o'clock, a. m.; 40° at one, p. m.; 30° at nine, p. m.—Mildest day in March, the 9th. Thermom. at 51°, 55°, and 52°, at the same hours. Wind S.S.W. Barometer at the lowest (29.2°) on the 18th; at the highest (30.2°) on the 10th. Wind S.W.

The hatch of a Kestrel, or Wind-hover (*Falco tinnunculus*), was brought to me in June last, consisting of four well-fledged birds. There were originally five, but one, attempting to fly on the approach of the nest-robber, fell to the ground and was killed. After disposing of the young brood, I went to examine the nest, which was on a Spruce-fir tree (*Pinus abies*), about sixteen feet from the ground. On taking it down, I had *olfactory* evidence of the callow brood's having had "enough and to spare" of animal food, for the stench arising from it was prodigious. Constructed of the withered branches of the Larch (*Pinus larix*), without much regard to architectural order, it would have been difficult to remove, had not the upper part of it been cemented together with a mass of the decomposed leavings of the young family. They had been amply supplied with fresh birds, as they had left the half-picked remains of many a former meal —a suitable couch whereon to repose their satiated bodies, in which I recognized the Finch and Sparrow tribes.

On my way from Norfolk, on the 8th of March, I found that the Rooks at Dapell, in Hertfordshire, had just completed their nests. I learnt on inquiry that they commenced the third week in February. At Wadesmill they had begun about a week, whereas in our neighbourhood they had not laid the first stick when I left home. The Rooks at the Tower in London are now highly busy at the same work.

Believe me to be, Dear Sir,

Most respectfully yours,

London, March 13, 1839. RICHARD PIGOTT.

known by the English name of "Hedge-sparrow;" while, on the other hand, the real *Fringilla montana*, or Tree Sparrow, possesses no song at all.—ED.

On tail-less Lizards.

To the Editor of the Naturalist.

Dear Sir,—I observe in your last number (p. 196), under the head "Notes on British Reptiles," a remark concerning the curious occurrence of the Nimble Lizard being found without its tail. I have frequently seen them, similarly-circumstanced, in the vicinity of old stone walls and rotten fences. In the month of July I formed an acquaintance with one, which I saw basking every sunny morning upon a hillock. So tame and gentle was it, that I frequently touched its back and head with a stalk of Grass. At length I missed my pet for a fortnight, when, to my surprise, I saw him, or a deputy, basking upon the favourite spot, minus his caudal extremity, and accompanied by a comrade, which was likewise imperfect. At a loss to account for their deprivation, I supposed an accident had been the cause; but in one of my rambles over our Chalk-hills, I found the shed skin of a Lizard, and no part of the tail adhering to it. I think it is matter for conjecture, whether the tails do not drop off when the skin is shed, and the animals are furnished with others in due time. The general loss of tails in the species at a certain period seems to strengthen this supposition.

On the Fracture on Rocks by Blasting.

In blasting our rocks in the Iguanodon Quarry, I have been struck with the similarity of the fracture caused by the explosion; and, from its being almost invariably the same, could not help supposing that some law of Nature produced the result. The fractures are three, and of the following form :—

Fig. 1.

As our stone contains a very large proportion of Lime, and the crystals being rhomboids, I think the figure must be owing to the fracture being led into the *lines* of the crystals, and we find the same figure produced in this drawing (Fig. 2), as in the other, supposing an expansive force situated in the centre :—

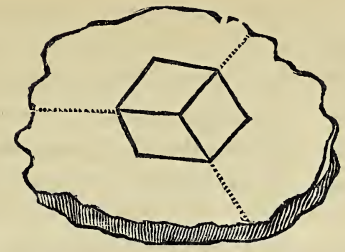


Fig. 2.

I have never seen rocks of any other kind than Lime-stone blasted. Can any of your correspondents inform me if the result is the same with stone not containing Carbonate of Lime?

I remain,

Yours very truly,

Maidstone, Feb. 15, 1839. W. H. Bensted.

CHAPTER OF CRITICISM.

Notes on various Topics.

To the Editor of the Naturalist.

Bewsey House, April 8, 1839.

My Dear Sir,—As I am aware that it would not be convenient to give a figure of *P. podalirius* in *The Naturalist*, I beg to refer Mr. Pigott to Mr. Duncan's work on British Butterflies published in Sir W. Jardine's series, or to Mr. Westwood's *Entomologist's Text-Book*. With reference to the latter work, I may take this opportunity of stating that it appears to me admirably adapted for the use of students. The matter is well arranged and interesting, and the figures (with one or two exceptions) are tolerably accurate. On the habits of the *Dyticacea* Mr. Pigott will find some information in Westwood's *Introduction to Classification*, Kirby and Spence, Griffith's *Cuvier*, &c. I shall probably "glance" at this tribe in a continuation to the paper on the *Adephaga* inserted in the last number, (p. 343).

Mr. Green has noticed (p. 319) a subject of considerable importance. The benefits accruing from Latin descriptions do not by any means, in my opinion, outweigh the disadvantages. In Magazines, especially, the insertion of Latin

articles is reprehensible. The failure of the *Entomological* was no doubt *in part* owing to this; and a similar result, or at all events a small circulation, may be expected from the pages of the *Annals of Natural History* being crowded with papers of this description. I am acquainted with more than one individual who (although conversant themselves with the *dead* languages), feeling convinced that in this respect the *Annals* were erroneously conducted, have ceased to subscribe to that periodical.

Mr. Green justly regrets that there is no work on the *species* of insects at a price within the reach of the majority of students. I am happy to inform him that there is a probability of this being shortly supplied. Mr. Curtis—who in competency for the task and amount of materials need not yield to any one—has announced his intention of publishing a *Synopsis of British Insects*, to appear in volumes, each volume containing an order. After Mr. C.'s announcement it is not probable that Mr. Westwood will attempt a similar work.

My friend Mr. T. B. Hall will I trust excuse me if I hint to him the propriety of using the *modern* names of the insects he may have to mention in his interesting papers. I am sorry to see "Papilio *Brassicæ*," "Pap. *napi*," "Phalæna *fuliginosa*," &c. To say the least of it, such nomenclature to entomologists looks rather slovenly, and I fear is not calculated to be beneficial to the student.

Believe me,

Faithfully yours,

To Neville Wood, Esq., &c. &c. Peter Rylands.

THE NATURALIST'S LITERARY PORTRAIT-GALLERY.*

(Continued from p. 373.)

No. V.—John Lindley, Ph.D., F.R.S., &c.

In the history of almost every department of science we find periods in which it has been especially indebted to the labours of a single individual. Those who thus distinguish themselves generally possess the qualities of extensive knowledge and acute thought—a power of grasping a large amount of facts, and an ability to arrange and separate them according to their most obvious relations and differences. The appearance of such individuals marks the progress of a science, and the history of their labours mostly forms the record of its advancement.

* This series—comprising zoologists, botanists, geologists, and meteorologists, and including both scientific and popular naturalists—will be continued every alternate month, each memoir being accompanied by a portrait and autograph.—Ed.

In this rank must be placed the eminent individual whose portrait is this month presented to the readers of *The Naturalist*. In the whole history of the science of Botany in this country perhaps no individual since the time of RAY has exercised so great influence on its advancement and cultivation as Dr. LINDLEY; and whether he be regarded as the laborious writer, the public teacher, or the skilful practitioner of his science, it will be found that he stands equally pre-eminent. The following sketch will therefore be chiefly confined to an account of his public exertions, and his career as a botanist.

JOHN LINDLEY was born Feb. 5, 1799, at Catton, near Norwich. His father at that time kept a considerable nursery; he is well known as an excellent practical horticulturist, and as the author of a work entitled *A Guide to Orchard and Kitchen Gardens*, a new edition of which has lately been edited by his son. Thus, from the circumstances of his family, Dr. LINDLEY was early introduced to those objects which have since obtained from him so much attention. He received his education at the grammar-school at Norwich, and produced his first work, a translation of RICHARD's *Analyse du Fruit*, in the year 1819.

In 1820 he published his *Monographia Rosarum*, a work displaying considerable research in the subject of which it treated, and affording promise of future excellence. This work was illustrated by many drawings, nearly the whole of which were from the pencil of Dr. LINDLEY. In 1821 he produced a paper entitled "Observations on *Pomaceæ*," which was published in the thirteenth volume of the *Linnæan Transactions*, and was but the beginning of a series of papers which have occasionally appeared in the Transactions of the Linnæan and Horticultural Societies. Of these papers generally it may be said that they display a thorough knowledge of what had been previously advanced on their respective subjects, and extensive observation of the organization and functions of the vegetable kingdom. Most of the views advanced in these papers have been reproduced in his larger works.

In the same year Dr. LINDLEY also published two other works, the one entitled *Monographia Digitalium*, the other *Collectanea Botanica*.

His productions up to this time may be considered but as slight preparations for a more laborious task, which, whether we look at its magnitude, or the comparatively short time in which it was executed, may be truly said to be Herculean. We refer to the descriptive portion of LOUDON's *Encyclopædia of Plants* (1829). One of Professor LINDLEY's bitter but ephemeral opponents describes this book as "a miracle of industry," whilst Mr. LOUDON thus acknowledges the extent to which he is indebted to Dr. L. in the above work:—"It remains only for the Editor to state that the botanical merits of this volume belong entirely to Professor LINDLEY;" with the exception of the execution of the designs, "he determined the genera and the number of species to be arranged under them,

prepared the specific characters, derivations, and accentuations; he either wrote or examined the notes, and corrected the whole while passing through the press." This was certainly one of the greatest botanical publications that had been attempted since the time of Ray, and in point of comprehensiveness is only second to the great work now executing by De Candolle. One great merit of the work consisted in its being the first attempt that had been made to present the English reader with the arrangement of the natural system of plants adapted for practical purposes. This system had for many years been cultivated and improved on the Continent; but, except occasional notices, little attention had been paid to it by botanists in our own country. The systematic works produced in Great Britain, with few exceptions, had been arranged on the artificial system of Linnæus, and with the prevalence of this system there was a remarkable want of interest in the important advances the science of Botany was making under the auspices of Jussieu, De Candolle, Richard, Agardh, and others, on the Continent; and our distinguished countryman Robert Brown.

The mind of Dr. Lindley was early struck with the necessity and utility of studying Botany upon the plan of a natural arrangement of plants; and shortly after the publication of the *Cyclopædia*, he produced his *Introduction to the Natural System of Botany* (1830). This work was an arrangement of the vegetable kingdom upon the system of Jussieu, as revised and improved by De Candolle. It was accompanied by an able essay upon the advantages and objects of the natural system, and the relative value of characters in the formation of natural orders. This work was an important addition to botanical literature in England, and one that was not only adapted to display the advantages of the natural system, but opened to the student a vast fund of information on the structure and uses of plants, hitherto closed from his view.

This work was followed in 1832 by another scarcely if at all inferior in point of importance,—the *Introduction to Systematic and Physiological Botany*, in which, as well as the former work, an intimate acquaintance with the labours of Continental botanists was displayed; and the British botanist was thus supplied with a correct exposition of the real state of botanical science.

When in 1829 Dr. Lindley was appointed Professor of Botany in the London University, no compendious arrangement of British plants upon the natural system existed. In order to supply this want he published a *Synopsis of the British Flora*, arranged according to the Jussieuan system, and thus completed the facilities his former works had afforded for the study of the vegetable kingdom according to its natural affinities. Each of the three last works has since passed through a second edition.

The mind that had accomplished these labours was not likely to remain passive whilst so many attempts were making to render the arrangement of

plants upon the natural system more perfect, and especially at a time when some of the most celebrated botanical writers were exhibiting a tendency to revert to a more artificial distribution of the smaller divisions of a natural arrangement than the state of botanical knowledge required. In 1833 Dr. LINDLEY published his *Nixus Plantarum*, in which the natural orders were distributed into alliances and groups (*nixus et cohortes*) under the primary divisions of the vegetable kingdom. This work was merely an outline containing short distinctive characters in Latin. It was, however, calculated to be useful; and, being well received by botanists, was quickly out of print, when the author was induced to publish a second edition in English, with many alterations and improvements, under the title of *Key to Systematic Botany*. With this work he also republished the contents of a small volume he had formerly printed, called *Outlines of the First Principles of Botany;* the two, forming one volume, constitute a valuable epitome of botanical science.

In 1831, an important event in the history of British science took place in the formation of the migrating British Association. At the meeting at Cambridge, in 1832, Dr. LINDLEY was requested to draw up a report on the present state of the science of Botany. This report was read the following year at the Oxford meeting, and was an able epitome of the then state of our knowledge upon the subject. Although Botany was introduced to the Association under such able auspices, perhaps no branch of science has received from it so little benefit.

The labours of Dr. LINDLEY, up to the publication of his *Nixus*, had been chiefly confined to the production of works adapted for the advanced student; but, duly appreciating the importance of easy and popular introductions to science, he engaged in the production of a series of familiar letters on the study of Botany by the natural system, published under the title of *Ladies' Botany*. In this volume he has successfully refuted the objection occasionally urged against the natural system, as unfitted for those who are commencing the study of Botany. *Ladies' Botany* was published in 1834, and a second edition has been lately printed.

In 1836, when a new edition of the *Introduction to the Natural System* was required, Dr. LINDLEY took the opportunity of rendering this work much more complete. He arranged the whole of the orders under the alliances and groups, which he had before published in his *Key;* and instead of giving merely a few examples of the genera under each order, he furnished complete lists of the genera and their synonyms, so that the work assumed a much more comprehensive and complete character. The whole appeared under the title of *A Natural System of Botany*.

One of the most recent works produced by Dr. LINDLEY, and which appeared last year, is the *Flora Medica*. Although perhaps no man could be found so

well adapted for the production of the botanical part of such a work, yet the fact of a treatise so much needed having been left to a non-professional writer is far from redounding to the credit of British Medicine. But it cannot be concealed that this has arisen from the members of the medical profession, amongst whom formerly Botany had found its most ardent and able cultivators, having fallen under the blighting influence of a system of studying Botany that had tended rather to retard than advance its progress; and a few imperfect attempts at the description and classification of medicinal plants was all that had of late years been produced on the subject of Medical Botany. This work is characterised by the author's usual labour and skill; its botanical merits have been generally acknowledged, and it will undoubtedly form a work of standard reference amongst our pharmacologists.

In addition to the publications now enumerated, Dr. LINDLEY is known to be the author of many of the volumes and articles published by the Society for the Diffusion of Useful Knowledge, in their *Penny Cyclopædia*, and other works. Although his name is not attached to these, yet their character is such that to those acquainted with his other works, there can be no doubt as to their authorship. In labouring for the diffusion of a sound knowledge of the principles of Botany, Dr. LINDLEY is an example to many men of science, who are too much inclined to disregard the importance of inculcating correct views of science in our popular literature, and thus the task of supplying the elements of knowledge too often falls into incompetent hands.

So far we have endeavoured to follow Dr. LINDLEY through those labours which have principally had an influence in introducing to British botanists the study of plants according to their natural affinities, and the principles on which such study should be established. These, however, are but a part of his scientific labours, and but the results of that accurate and extensive knowledge of the individual members of the vegetable kingdom, the amount of which has been more particularly seen in his works on descriptive Botany. The most important of these is his splendid treatise *On the Genera and Species of Orchidaceæ*. The illustrations of these plants were from the inimitable pencil of Mr. BAUER, to whose genius and talents Dr. LINDLEY pays a just tribute, in his *Natural System*, at the same time acknowledging the extent to which he was indebted to him, in carrying on the publication of this work.

The *Botanical Register*, which has now for many years been edited by Dr. LINDLEY, is a monthly Journal containing drawings and descriptions of new plants. From its comparatively low price, and the accuracy with which it is executed, it is well adapted to supply the wants of the botanist, and amongst other works is justly referred to by the celebrated LINK as a model of iconography worthy the imitation of his countrymen.

Dr. LINDLEY's first communication to the *Botanical Register* was in August, 1819, when he furnished the Editor with a long technical description of the structure of *Maranta zebrina*. The next was in the following October, when the natural order *Calycanthaceæ* was for the first time distinguished and defined. We believe this juvenile attempt was by some considered little less than an impertinence on the part of one who could not be supposed to know much of such high matters. It has, however, turned out that our author was right, for no one has ever in print expressed a doubt of the goodness of the order. Since that time he continued to contribute occasional articles to the *Botanical Register* until 1825, when he became sole Editor, on the retirement of Mr. BELLENDER KER.

Nor has the attention of Dr. LINDLEY been confined to the present Flora of our globe, for he has lent the aid of his great knowledge of the recent forms of plants in order to elucidate the character of that vegetation which has left its impressions in the strata of a former world. The results of his investigations have been given to the world in the *Fossil Flora of Great Britain*, which, in conjunction with Mr. HUTTON, he commenced in 1833.

Early in the present year Dr. LINDLEY presented to the public another work, called *School Botany*. The design of this book originated in the regulations of the new London University, which wisely require that the student shall be examined in "the characters and differences of the principal natural classes and orders of plants belonging to the Flora of Europe, in the botanical classification of DE CANDOLLE." In this work the principal natural orders are illustrated by genera and species, and the whole is arranged according to DE CANDOLLE's system.

In the preceding remarks we have followed the principal labours of Dr. LINDLEY as an author; we shall now advert to him in another department of labour—that of a public teacher. In 1829 he was appointed to the Chair of Botany in the London University, now "University College." At this time little attention had been paid to the study of Botany as a branch of education in London; and although looked upon principally as a part of medical education, it did not as an especial subject enter into the curriculum of requirements of any of the bodies in London which examined candidates for practising the various branches of Medicine. When this appointment was made, the success of the chair was looked upon as doubtful, Botany having previously been only taught in connection with Materia Medica, and being as a science far from popular. However, Dr. LINDLEY commenced, with that energy which attends a man who is aware of the importance and interest of the subject he undertakes, and his efforts were soon crowned with success. There was a strong disposition manifested on the part of the students of Medicine to cultivate the science of Botany; and on the offering of prizes to those most proficient in Botany by the University and the

Company of Apothecaries, increased attention was given to the science, which has since terminated in the requiring it as a distinct branch of education by the medical corporations. Up to the present time Dr. LINDLEY's has been an increasing class at University College, and the influence of his instructions upon so large a body of intelligent young men cannot but produce an important effect on the cultivation of Botany in this country. Already many of his pupils have distinguished themselves by their original researches and writings, amongst whom we may mention Messrs. GRIFFITHS, SLACK,* and CARPENTER.

In 1831 he was appointed Professor of Botany to the Royal Institution of Great Britain, where another opportunity was afforded him of insisting on and extending those views inculcated in so many of his works.

On the death of the late Professor BURNETT—whose early career promised so much usefulness in the spread and advancement of the science of Botany—Dr. LINDLEY was requested to become Lecturer to the Society of Apothecaries. This office he accepted, and in the Summer of 1835 commenced his lectures in the Botanic Gardens at Chelsea. Medical students from all schools are allowed to attend these gardens, and the interest excited by the appointment was attested by their crowded attendance during the delivery of the first course of lectures. Hence a large proportion of the future medical practitioners of Great Britain are brought under the immediate instructions of Dr. LINDLEY. This cannot fail to produce important effects on the student and those by whom he is taught,—on the former by bringing him into a situation where he is alone likely to gain an interest in the study of Botany, and on the latter by providing him with attentive pupils to excite his zeal and industry, instead of the listless loungers upon half-empty benches, whose only object is to obtain a certificate of "*Diligently* attended."

Amongst the public offices of Dr. LINDLEY, is that of Assistant-Secretary to the Horticultural Society, which he has filled since the year 1822. Having the gardens of the Society at Chiswick under his superintendence, this appointment has afforded him an opportunity of practically applying the principles of Botany to increasing and extending the various luxuries and comforts of life derived from the vegetable kingdom. The various arrangements of these gardens carried on under his inspection, and the results of many valuable series of experiments which have been published in the Transactions of the Society, are proofs of the advantages derived from his labours by practical Horticulture.

It is not at all probable that labours so extensive and useful as those of Dr. LINDLEY would be confined to his own country, and we accordingly find that

* This amiable and talented naturalist—an early friend of the Editor's—unfortunately lost his life on the Continent some time since, while bathing.

most of his works have been translated on the Continent. As an acknowledgement of the estimation attached to his labours, the University of Munich presented him with their diploma of Ph.D. in the year 1833. He has also been elected Honorary or Corresponding Member of the following celebrated foreign institutions —the Royal Academy of Sciences at Berlin, the Linnæan Society at Stockholm, the Dutch Society of Science, the Royal Prussian Horticultural Society, the New-York Lyceum of Natural History, the Botanical Society at Ratisbon, &c. Among the scientific bodies of our own country, he is a Fellow of the Royal, Linnæan, and Geological Societies.

As a writer, Dr. LINDLEY must rank among the first, not more on account of the scientific character of his works than for the classic style in which they are written, and their freedom from those defects that often display themselves in the productions of voluminous authors. From the freedom and elegance which characterises his *Ladies' Botany*, to the terseness and vigour of the *Introduction* and *Natural System*, there is an adaptation of style and language to the subject that places his works amongst the best compositions of British scientific literature.

As impartial biographers, however, no doubt we shall be expected to touch upon one point respecting which much has been said and written on both sides. We allude to the manner in which Dr. LINDLEY treats the labours of his great predecessor, LINNÆUS. That, on the one hand, the Doctor occasionally comments with unnecessary severity on the system of the "illustrious Swede" and his school, we fully believe and as freely admit. This allows of no palliation; for while it cannot possibly add to the lustre of any man of science to speak slightingly of the labours of his brother investigators, such a course will never convince an opponent of the superior wisdom of the accusing party, or the correctness of his views. On the other hand, such a foible can be no drawback whatever on the reputation of the Doctor as a scientific botanist; and we cannot but think the Linnæan botanists—carried away by a natural though unfortunately too often an almost blind zeal for the system of their master—have laid more stress upon the circumstance than it actually deserves. That in discussing the views of others, we *ought to be* temperate and collected, will admit of no doubt; but then we must never forget that we are but human, and cannot expect to reach *perfection*. Such appears to us a clear view of the case between our author and the Linnæans.

As a public teacher, Dr. LINDLEY stands very high. His delivery is good, his manner easy; and, having a clear conception of his subject, and expressing himself in a simple language, he never fails to convey to his pupils an intelligible view of what he is teaching. In his lectures he never forgets the great object of *teaching;* and, with all the resources he has at command, no man can be

accused so little of display. He is also punctual, despite the long ride from Turnham Green. He is constantly in his lecture-room at University College, both in Winter and Summer courses, at his appointed time. On these occasions he forms a remarkable contrast to the pupils by whom he is surrounded. He is a fresh, ruddy, hale-looking man, and after his morning's ride, in the midst of large bundles of fresh-plucked plants, presents an appearance entirely different from that of the "pale students," who have generally been but a few minutes before roused from their too scanty slumbers. In his class-room he is kind and attentive to his pupils; and numbers can still testify that, though they have long since been deprived of his instructions there, they continue to experience the same treatment.

Were we writing with the cognizance of Dr. Lindley, we should have liked to have finished our imperfect sketch of his labours as a man of science by following him into the bosom of private life, where we should find that, however great may have been his public efforts, he has had time to cherish those pure and elevated affections which always shed a double lustre on the acquirements of intellect, and the endowments of genius.

Dr. Lindley is married, and has several children. He resides at Turnham Green, within a short walk of the gardens of the Horticultural Society.

The family to which Dr. Lindley belongs is a branch of the Lindleys of Jowet House, in Yorkshire, who were trustees of the Earl of Essex, in the reign of Queen Elizabeth.

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

ENTOMOLOGICAL SOCIETY.

April 1.—The Rev. F. W. Hope, F.R.S., Pres., in the chair.—Mr. Raddon, of Bristol, exhibited several specimens of African Copal, containing a great variety of insects peculiar to this singular excretion. He also mentioned a new plan which he had adopted for catching Moths by daylight in the Sandy districts of Devonshire, which was merely by stirring up the hillocks found at the roots of Grass, when they issued forth in considerable numbers. Mr. Raddon next exhibited some cones of the common Spruce Fir, which when opened were found to contain small larvæ of an insect from Sierra-Leone, amongst which was *Tenebrio digitans*, a rare and large Beetle, hitherto supposed to be confined to India and New-South-Wales, and which was now proved to belong to an African

group.—Mr. Newport read a communication on the habits and construction of nests of gregarious *Hymenoptera*, in which he stated that he had effected a separation of the two connected cells of Bees, thus proving the hexagonal or an approach-figure to be the original form of construction.

LINNÆAN SOCIETY.

April 2.—The Bishop of Norwich, Pres., in the chair.—Mr. Ingpen exhibited for distribution a quantity of the roots of *Crocus vernus*, the original English variety, which is not found in any part of the country, with the exception of the Nottingham meadows; and a flowering specimen of *Salix precox*.—Mr. Owen read a long paper on a new species of *Lepidosiren*, found by M. Natterer, in the Brazils, which was an amphibious animal, having many analogies with the Eel.—The most curious articles in the room were some specimens of photogenic etchings from Mr. Willmore. The glass, being first covered with varnish, is etched out by a graver the same as with copper-plates, and this is exposed to light with the prepared photogenic paper behind, when the effects of a very beautiful etching are immediately produced.

ZOOLOGICAL SOCIETY.

April 4.—B. B. Cabbell, Esq., V.-P., in the chair.—The report of the Council gave the following as the statement of the accounts:—The balance in hand at the last report was £1,440 0s. 6d., and the receipts during the month were £1,138 16s. 6d. There had been expended on the gardens, £706 6s. 2d.; on the museum, £65 18s. 6d.; the general establishment, £195 19s. 11d.; and invested in the purchase of stock, £800—making a total of £1,768 4s. 7d., and leaving a balance of £810 12s. 6. Amongst the new contracts it was stated that a more advantageous one had been made in letting the refreshment-room at the gardens, for which the sum of £360 had been received for one year in advance. Among the donations to the museum were several specimens from the Saffron-Walden Natural-History Society, the Durham Museum, &c. The number of visitors was 398. The most interesting presents to the menagerie were a pair of rare Golden Pheasants from Mr. Chester, and a Flying Opossum from Lady Maria Stanley; and amongst other donors were the Earl of Derby, Sir John R. Boileau, Bart., &c. The number of visitors to the gardens was 5,860, from whom £118 10s. was received.

GEOLOGICAL SOCIETY.

The Rev. Dr. Buckland, F.R.S., in the chair.—A communication was read "On Impressions of Drops of Rain on Slabs of New Red Sandstone, in the Storeton Quarries, Cheshire, and coeval with the Formation of the Strata," by

Mr. John Cunningham, of Liverpool. In a paper read before the Society on the 3rd of December, an account was given of impressions of footsteps of several animals in the New Red Sandstone of the Storeton Quarries, about three miles S.W. of Liverpool. In examining some of the slabs of stone, extracted at the depth of above three feet, Mr. Cunningham observed that the under surface was densely covered with minute hemispherical projections, or casts in relief of circular pits in the immediately-subjacent layers of Clay. The origin of these marks, he thinks, must be ascribed to showers of rain which fell upon an argillaceous beach exposed by the retiring tide, and their preservation to the filling-up of the indentations with Sand. On the small slabs are impressions of feet of small reptiles, which appear to have passed over the Clay previous to the shower, since the foot-marks are indented with circular pits, but to a less degree; and the difference Mr. C. explains by the pressure of the animal having rendered these portions of Clay less easily acted-upon. That rain fell during the remote ages of the world, the author stated, no person acquainted with Geology will dispute, as to the destructive and transporting agency of rain water many of the sedimentary strata owe their origin. The vast forests, also, which grew at a period anterior to the New Red Sandstone, and are treasured up in our Coal-fields, could not have flourished without great supplies of atmospheric waters; and that the effects of rain may be preserved in a solid form, he proved by reference to an account given by Mr. Scrope of a shower which fell upon extremely fine volcanic ashes thrown out by Vesuvius during the eruption of 1822. The drops of rain formed small globules, which hardened into pellets, and accumulated in some places at the foot of a slope, in beds a foot or more in thickness, and were often so agglutinated that it required a sharp blow from a hammer to break the mass. —*March* 19.

LEEDS PHILOSOPHICAL AND LITERARY SOCIETY.

The following are among the recent donations presented to this Society :—Two plaster casts of the fossil footsteps of *Cheirotherium*, and some unknown animals, from the New Red Sandstone at Storeton-Hill Quarry, Cheshire, by Messrs. March and Maclea, Leeds.—A series of specimens exhibiting the brain, optic nerves, eyes, tentacula; cartilaginous rings from the suckers of the tentacula; dorsal horny lamina; beaks and respiratory apparatus of *Loligo sagittata*; specimens exhibiting the internal structure of *Asterias rubens*, and *Solen siliqua*; specimens of *Beroe pileus*, by Mr. T. P. Teale, F.L.S., Curator.—Two fine specimens of native Copper-ore, from Great-Wheal-Gawton mine, Devonshire, by Mr. Potter, Leeds.—*Paludina vivipara*; *Helix caperata* and *H. carthusiana*; two fossils belonging to a species of cephalopod, from the Magnesian Limestone of Garforth; and specimens of *Cypris*, from Colton, by Mr. S. H. Fletcher, Gar-

forth.—Several shells, teeth, and palatal bones of fish, from the Suffolk crag; *Ventriculites radiatus*, from the Chalk, by Mr. G. Hubbard, Bury, Suffolk.—Twelve numbers of *The Naturalist*, by Neville Wood, Esq., Campsall Hall, the Editor.—A collection of teeth, scales of fish, and *Coprolites*, from the Shale at Middleton colliery, by Messrs. T. W. Embleton, Sparke George, J. R. Hubbard, and N. P. Simes.—Three Ferns, specimens of *Goniatites Listeri*, and several other shells, from the Halifax Coal-field, by Abraham Jubb, Esq., Halifax.—*Ulodendron minus*, two species of *Neuropteris*, and other fossils, from Low Moor, by Mr. Sparke George.—Twenty-two fossils from the Speeton Clay, and seven from the Red Chalk, by Mr. T. P. Teale, F.L.S., Curator.—Several spemimens of *Trigonocarpum* in Sandstone, from Morley, by Mr. J. Drabble, Leeds.—*Leeds Mercury, March* 30, 1839.

EXTRACTS FROM FOREIGN PUBLICATIONS.

ZOOLOGY.

1. Calcareous Coverings of *Polypi*.—The observations of Dr. Milne Edwards on the *Polypi* of the Mediterranean, have induced him to conclude that the horny, cartilaginous or calcareous coverings which envelop them, far from being merely external crusts, without any organic connexion with the animals which produce them, are integrant parts of these beings, and consist of an organized tissue, the substance of which is more or less charged with horny or calcareous matter deposited in it; and the nutrition of which is effected by introsusception. Among all these animals there exists a tendency in their tegumentary and reproductive parts to become hard, and the degree of solidification which these parts attain, is the only character by which zoologists can class them, as naked Polyps, flexible Polyps, &c. Thus the cartilaginous or stony covering of a *Sertularia*, or *Zoantharia*, is not a dwelling constructed for themselves by these animals, but a skin which forms a solid frame-work of their body; and which, like the skin of vertebrated animals, sometimes affects a membranous form, at others a cartilaginous texture, and even a condition which may be called bony.

2. Death of a tame Elephant in Paris.—"Asie," the male Elephant in the Jardin des Plantes, died on Saturday, March 23, after an illness of ten days. The chief remedy administered was honey dissolved in water, given in *homœopathic* doses of about ten-pails-full at a time, sometimes with the addition of sulphate of soda. The only person who could induce him to take his medicine was Gean

his keeper, to whom the animal was much attached. During his last illness he was lying in a position which evidently aggravated his sufferings; twenty men with strong ropes, and the power of a capstan, were found necessary to move him into a better position. M. Blainville is dissecting the body; and M. Werner, a painter attached to the museum, is delineating the pathological peculiarities which the operation exposes.

In this case the French "do-nothing policy" appears to have been followed. We should take it as a favour, if any of our French readers would inform us how many eminent veterinary surgeons "watched" the progress of the disease!

BOTANY.

3. Beet-root Sugar.—The manufacture of sugar from the Beet-root extends every year in France. An eminent French sugar-speculator has attempted the manufacture on a considerable extent in London; but it appears that success is here less complete, on account of the greater frigidity of our climate.

4. Georgian Clover-seed.—A new and highly prolific seed has lately been introduced to the notice of British agriculturists. It was imported from Buckhara, Georgia, in which country the plant grows to the height of about twelve feet. From its stalk a kind of hemp is prepared by the natives, which they prefer to any other sort. Should the plant succeed in this country, its cultivation will render us independent of Continental importation of Clover-seed; for it is asserted that a single plant will produce an average supply of 300,000 seeds. The Georgian Clover should be sown in the month of April.

5. The Lapacho-tree.—The Lapacho is not only the finest but the most magnificent of all trees. English Oak is very fine, but never to be compared to Lapacho. From the solid trunk of one of these trees a Portuguese scooped out at Villa-Real a canoe, which brought down to Assumption a hundred bales of yerba (that is 22,500 lbs. of Paraguay tea), several hides made up into balls and filled with molasses, a load of deals, seventy packages of tobacco, and eight Paraguay sailors to manage the three masts and sails of the large, but yet elegantly scooped-out trunk of the Lapacho-tree. Of this tree are constructed vessels which, when fifty years old, may still be called young. Their frame is not shaken, nor is their constitution debilitated by all the bumps they receive on the sand-banks of the Parana, nor by the searching rays of a tropical sun, nor by the "even down pours," as the Scotch have it, of tropical rains.

6. Management of Gardens in Persia.—Many owners of gardens near cities in Caubul, are accustomed to charge a certain sum to visitors, who are allowed to enter and eat fruit *à discretion*. The Persians, who must invent a joke upon every thing, declare that at Caubul the eaters of fruit are weighed on entering and on coming out of the gardens, and are charged for the difference; and they

tell how a certain wag put stones in his pocket, which he threw away in the gardens, so that when he had eaten his fill of fruit, and was weighed on coming out, he was found lighter than when he had gone in—a problem which long puzzled the wise men of the "city of one hundred thousand gardens."

GEOLOGY.

7. Geological Features of the Dukhan, East Indies.—I close this paper, says Colonel Sykes, with a recapitulation of the characteristic features of the peninsula; namely, the amazing extent of the Trap region, and the horizontal position of its stratified beds, the granitic base of the whole country; Trap veins in Granite; the absence, as far as is known, of that uniform series of rocks which constitutes the formations of Europe; the extended and peculiar Limestone and Laterite formations; the occurrence of pulverulent Limestone in seams; and, finally, the non-discovery, hitherto, of the fossil remains of extinct animals within the limits of the peninsula.

REVIEWS OF NEW PUBLICATIONS.

A Treatise on the Growth of Cucumbers and Melons; conjointly with that of Asparagus, Mushrooms, Rhubarb, &c. By John Smith, upwards of twenty-four years Gardener to Dykes Alexander, Esquire, of Ipswich. Fourth edition, improved and enlarged. Fcap. 8vo. pp. 93. London: *Longman & Co.; Burton*, Ipswich. 1839.

The clear and unaffected style in which this little volume is written, and the able manner in which the author has imparted the details of a practice successfully pursued during many years, have long since rendered his pages deservedly popular.

We do not notice any errors of omission or commission in Mr. Smith's volume, which we therefore cordially recommend to our horticultural friends. To comment further on a *fourth edition* were a work of supererogation. The fact speaks for itself.

Practical Observations on the Causes and Treatment of Curvatures of the Spine. By Samuel Hare, Surgeon. London: *Simpkin & Co.; W. Bean and Son*, Leeds. 1838. Royal 8vo. pp. 151.

This work is not calculated for criticism in the pages of *The Naturalist;* but

we feel much pleasure in calling the attention of our readers—professional as well as general—to the practical tendency of the treatise, founded on the author's experience. The illustrative plates are extremely well executed, and the facts stated and cases enumerated cannot but be useful to the medical practitioner.

We would especially point out the two concluding chapters, as containing important matter for consideration, and which, singularly enough, have been overlooked by the majority of our editorial brethren.

LITERARY INTELLIGENCE.

A second edition of Mr. Henry Taylor's *Bee-Keeper's Manual* (the first impression of which is reviewed in our Vol. III., p. 393) has lately appeared.—A little volume entitled *The Author's Printing and Publishing Assistant* will receive early notice.

CHAPTER OF MISCELLANIES.

BOTANY.

Exudation of Sap from the Ash-tree.—On the 13th of April instant, and the following days, a large quantity of sap—to the amount, probably, of a bucketful, or more—was observed to flow from the upper branches of an Ash-tree at Campsall. The circumstance must have been occasioned by the sudden rise of sap caused by the first warm day in Spring. If any branch had previously been accidentally broken, this exudation would be a necessary consequence; but probably it might take place in an otherwise uninjured limb.—Ed.

Botanical Lectures at Tewkesbury.—Mr. Edwin Lees has recently delivered a course of three lectures, at the Town Hall, Tewkesbury, to a numerous and respectable audience of the friends and members of the Literary, Scientific, and Mechanics' Institution of that town, "On the Phenomena apparent in the Vegetable Kingdom." We should augur favourably respecting the advance of Botany in this country had we a few more such lecturers as Mr. Lees.—Ed.

Introduction of the Orange-tree into Portugal.—Camoens is said to have introduced the Orange into Portugal. "Yes!" said Camoens, apostrophising the fragrant little grove that waved before the open casement, "I have made a bower

for the Honey Bee, hung with golden lamps; the wayfarer may laugh at the poet's fancy, as though I had won a chaplet of flowers that must wither and die; but a time will come when the thirsty traveller shall drink of the founts of that tree throughout the land,—ships shall freight themselves from its branches, and the maiden hear the song of CAMOENS beneath its boughs, breathed by a lover's voice, as, culling the fragrant blossoms, he binds them on her brow, and wins her for his bride."—JOHN's *Legend and Romance.*

WOURALI POISON.—This vegetable poison, obtained by Mr. WATERTON many years ago in South-America, has recently been the subject of various experiments. A few weeks since, Mr. W. was requested to administer the remedy to a man at Nottingham, who had been bitten by a mad Dog; but unfortunately the poor fellow died before that gentleman's arrival in the town. Subsequently, before several medical men in the same town, Mr. WATERTON gave some of the poison to a Dog, in order to prove its fatal tendency. This established, a portion of the poison was given to an Ass, which ere long lost all signs of life, the pulse being wholly inappreciable. An incision was then made in the trachea, and after artificial respiration had been kept up for several hours, the animal gradually recovered, and is now, we believe, in perfect health. This is similar to the experiment related in the *Wanderings*, respecting the Ass "Wouralia," which is still living at Walton Park. The necessary point seems to be to maintain an artificial respiration until the action of the poison on the system has in some degree subsided. We believe the Wourali poison is obtained from a species of Vine.—ED.

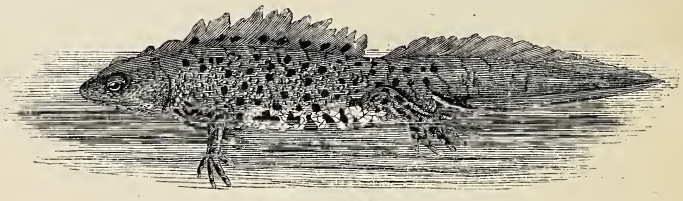
GEOLOGY.

QUERY RESPECTING GEOLOGICAL MAPS OF ENGLAND.—I should be obliged by any of your correspondents furnishing the readers of *The Naturalist* with a list of the different geological maps showing the distribution of the various strata throughout the counties of England and Wales, with some slight notice of their merits, and the price at which they are published, which would be useful as a guide towards the purchase of the most useful.—T. B. HALL, *Coggeshall, Essex, April* 14, 1839.—[We are not acquainted with any geological maps of separate counties; but can confidently recommend the "*Map of the Inland Navigation, Canals, and Rail-roads, with the Situations of the various Mineral Productions throughout Great Britain;* from actual Surveys, projected on the Basis of the Trigonometrical Survey made by Order of the Honorable the Board of Ordnance. By J. WALKER, Land and Mineral Surveyor, Wakefield. Accompanied by a Book of Reference. Compiled by JOSEPH PRIESTLEY, Esq., of the Aire and Calder Navigation. London: *Longman and Co.; Nichols*, Wakefield. 1830." This map is about five feet square, and its price may be learnt by inquiry of any

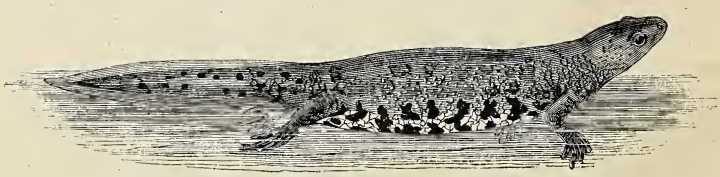
bookseller. A still more recent map on the same scale, and therefore of superior value in some respects, though perhaps less complete as regards the insertion of small towns and villages, has been published within the last twelve months, under the title of "*A Geological Map of England, Wales, and Part of Scotland;* showing also the Inland Navigation by means of Rivers and Canals, with their Elevation in Feet above the Sea; together with the Rail-roads and principal Roads. By J. and C. WALKER. No. 9, Castle-Street, Holborn, London." Either of these maps will be found extremely useful. We shall, however, be happy to receive any information respecting geological maps of counties.—ED.]

GEOLOGICAL DISCOVERY.—On the 8th of March Mr. P. MARRATT (son of Mr. MARRATT, lecturer on Geology, from Liverpool) discovered in a stone-quarry, at Strensham, about seven miles from Tewkesbury, part of the skeleton of an *Ichthyosaurus*. He had been out several times in the neighbourhood in search of fossils, when, in one of these excursions, a man at work in a pit showed him a single vertebra, which he had picked up as a curiosity. After a minute search in the walls of the pit, Mr. M. had the good fortune to discover another bone protruding from a bed of Clay Shale, and a few more of the vertebræ were obtained that evening. The next morning he again repaired to the spot, and directed the workmen to excavate a large opening, when the paddles and a number more of the vertebræ, with the arms (the humerus, radius, &c., attached to the paddles), were found in good preservation. The ribs are much broken, as the skeleton was lying on one of its sides. More than fifty of the vertebræ have been found, and measure five feet and a half in length; but the whole of the head is wanting. The entire length of the animal must have been upwards of *ten feet*. Thus has another of these precious reliquiæ, the ancient inhabitants of our earth, been brought to light, by a young man not nineteen years of age. Three teeth and part of a paddle of another *Ichthyosaurus* have since been found by Mr. M. in a different pit, about 300 yards from the former, which certainly gave indications of a head having been deposited somewhere in the vicinity; but after a patient search for three days, no head could be found. Mr. MARRATT, Sen., and his son, at the time of this interesting discovery were engaged in delivering a course of lectures on Geology to the members of the Tewkesbury Scientific Society recently established in that borough, and during their stay in the neighbourhood produced numerous rare and beautiful fossils, &c., from the vicinity of Bredon Hill and adjoining villages.

Male in autumn.



Male in breeding season.



Female in breeding season.

THE WARTY EFT. (*Triton palustris.*)

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THE NATURALIST.

VOL. IV., NO. XXXIII.—JUNE, 1839.

ABSTRACT OF DR. ROBERT H. SCHOMBURGK'S REPORT OF AN EXPEDITION INTO THE INTERIOR OF BRITISH GUIANA.

By Henry Buist.

(Concluded from page 255.)

Many of the savannahs we crossed were covered with the fabrics of a species of *Termites;* their nests were pyramidal and fantastic, and from five to ten feet in height; they are formed of the ochreous Clay of the savannahs. The insects themselves do not appear to differ, except in being rather smaller than those which build large nests on the trees, and which are known in the West-Indian Islands by the name of the Wood Ant; here they are called by the Indians "*Toukousiba.*" Another kind incrusted the trunks of trees from the base to the branches, giving them an appearance as if they were fringed.

Being obliged to remain for several days at the village of Pirarara, an excursion to the mountain valley of the river Maou, or Mahou, in the Parina mountains, was decided on.—Furnished, therefore, with provisions, we started towards the mountains, passing the celebrated Lake Amacu, where numerous flocks of Ducks rose out of the marshes and flew round us in circles; they were mostly of that kind called *Vicissi.** The species peculiar to these regions are uncommonly pretty in appearance, their feathers being variously coloured, their bill short, eyes black. The Musk Duck (*Anas moschata*) likewise frequents the lake in large flocks. A bare rugged mountain was our guide to the Maou. When we approached, it was found to be covered with fragments of Quartz, while large boulders of *Trappean* origin gave it a rugged appearance. We have noticed the *Bursera gummifera*, the Turpentine-tree of the Islands; also *Croton balsamiferum*, *astroites*, *betulinum;*

* The Vicissy Duck is smaller than the European Duck; bill, legs, and feet of an orange colour; feathers on the top of the head brown, with variegated bars; breast a dark mahogany colour. The Vicissy breeds in the savannahs, and makes a sort of whistling noise, not in the least like that made by Ducks in England. They are so timid when fired at, that, though unhurt, they will fall to the ground to all appearance dead: but if not mortally wounded they are never discovered, as they hide themselves in the Grass with surprising dexterity. They are very delicate eating, being free from that fishy taste so unpleasant in the Muscovy Duck.—Martin's *Brit. Colonies*, Vol. II., p. 101.

Mimosa nudiflora; Randia aculeata; Cactus Royeni, trigonus; Agave; &c. &c.
We quitted Pirarara, returned to the Annay, and arrived at the settlement at the mouth of that brook after an absence of about six weeks. We, however, left this place immediately, and removed to a hut at Currassawaak, which was our residence during the remainder of our stay at the Rupunoony.

The chief here had shot during one of his excursions on the Rupunoony, with an arrow provided with a spike poisoned by the Wourali, a young Tapir, or Mypourie* (*Tapir Americanus*); and though the point of the arrow had only penetrated the skin, and caused scarcely any loss of blood, it was sufficient to destroy life.† I was glad to have an opportunity of inspecting the animal, which hitherto I only knew from descriptions and drawings. It was from the nose to the tail eight feet long, and nearly three feet high; in its shape it most resembled the Hog, with the exception that in proportion it had much shorter legs; on the fore feet it had four toes, and three behind; from the forehead projects a bone which is connected with the upper lip, forming with the nostrils a kind of proboscis not unlike that of the Elephant; the Tapir makes in many respects a similar use of it.‡ The skin is very thick, and covered with short hair of a dusky grey colour; the ears are small and pointed. In the upper jaw I counted seven incisors on each side, four teeth in front, and two tusks; in the under jaw six incisors and one tusk on each side. The three kinds of teeth formed an uninterrupted line. We found its meat uncommonly good, resembling beef.

It had been my wish to see the tree which produces *Caska preciosa* of the Brazilians, or "*Amapiama*" of the Indians, which, however, was not to be found in the neighbourhood of Currassawaak, but at some distance. I therefore resolved to accompany the chief to the place, and, following the course of the brook, we started on our journey. It was a wild path, if indeed path it could be called. We approached a thicket of wild Bamboo (*Nactus*), and while we were still a few yards from it, a large Guana-snake (*Scytale*, spec. ? perhaps *catenatus*) came out of the brushwood, and ran towards the brook; it was shot by one of the attendants. Like the Guana it had a pouch under the throat; the mouth was protected by large plates; the head covered with scales; and the belly and tail

* When full grown the American Tapir is about the size of an ordinary Donkey; and, small as it is, it is the largest of the land Mammalia of the rich and humid places of South-America, over which it is pretty generally distributed; but is nowhere very abundant. It feeds during the night on wild fruits and other pulpy and succulent vegetables, and sleeps the greater part of the day. It is fond of the water, and swims well, with a leaping motion, something like that of a Pig.—H. B.

† The Tapir is in general very tenacious of life. D'Azzara mentions having seen one run for some time after two musket balls had passed through its heart.—H. B.

‡ It has not action enough for actually seizing any substance, but it may assist the animal in opening a passage among the thick and tangled vegetation. It is not used in rooting in the ground, and is not adapted for it.—H. B.

with shields,—those on the belly being perfectly formed, while those on the tail were not entire; and there were four rows of small pointed scales, which terminated the tail. Its colour was yellow, with black spots in the form of a lozenge, its length about six feet and a half. On our approach it coiled its tail, and raised its head to the height of three feet with a gently trembling motion: it then uncoiled itself, and repeated the same manœuvre in the reverse manner, making its head the point of support, and vibrating its elevated tail: it was in the act of renewing this singular feat when it was shot through the head.

Our wish to see the tree which produces the aromatic bark was not gratified. After we had searched for hours at the place where the tree was said to be, the Indians had to acknowledge they could not find it. I was subsequently fortunate enough to procure at least the bark and leaves, though the tree was at the period in that state so uninteresting to botanists, bearing neither blossom nor fruit. The bark is highly aromatic, and is used by the Indians in dysentery, fluxes, and other similar diseases. I saw likewise the Varnish-tree, possessing a milk which, after being boiled to a consistency, is used to give to their cassida-graters and other instruments a gloss and more durability; but in this instance I was not more fortunate than in the former. The tree was in its state of rest, and neither in blossom nor covered with fruit. It is from fifty to sixty feet high, its bark rather grey, and the leaves most resemble those of the Amyris.

There are chiefly two species of Turtle which frequent the Rupunoony and upper Essequibo: *Emys tricarinata*, called by the Indians "*Casseepan;*" and another species perhaps of the same genus, which the Indians call "*Tarakayba.*" There is a third species of fresh-water Turtle, which, however, is scarce on the Rupunoony; it is the "*Matamata,*" or *Chelys fimbriata* of authors; the latter is about two feet long, the nose terminates in a kind of proboscis, the feet are webbed, five toes before and four behind, are armed with claws, and the short tail is rather rounded. The large head and the elongated nose give to this species quite a peculiar appearance; its flesh is as delicate as that of the other fresh-water Turtle. The eggs of the two first species are gathered by the Indians in large quantities in the months of February and March. They are different in form; those of the first are almost perfectly round, and the calcareous shell resembles parchment; while those of the second, smaller in size and of an oblong shape, might be taken for birds' eggs. The eggs of the "*Tarakayba*" are more delicate than those of the "*Casseepan;*" they are generally deposited in holes, the number of eggs contained in them amounting to from sixteen to twenty.

We now left the Currassawaak, and in the course of the next day arrived at the junction of the Rupunoony with the Essequibo, when we began to ascend the latter river. The vegetation of its banks was more luxuriant than that of

the Rupunoony. The Mora-trees* were in blossom, and the white flowers formed a pretty contrast with the dark-green leaves; the branching "*Oubondi*," or wild Cashew-tree, vied in height with the Mora, and numerous Monkies jumped from branch to branch, and, astonished at the uncommon visit, accompanied us a considerable distance. Our Caribees called this species "*Arieghi*" or "*Yahria*." The male has strait long hair of a shining black, the head rather round, the forehead and part of the face and neck covered with short yellowish hair, part of the front, the nose, and mouth black, the latter slightly bearded, hands black, nails claw-like, except the thumb. The female is different in colour, and her fur resembles that of the European Hare; her hands are likewise black, and covered with short yellowish hairs; from under the eyes to the chin extends hair of a similar colour, but somewhat larger than that of the front and cheeks; the breast is nearly naked, and the *os hyoides* visible. They jumped with great agility from tree to tree, the female and sometimes the male carrying the young ones upon the back. The length of the body is sixteen inches, that of the tail sixteen to sixteen inches and a half, their height about ten inches and a half to eleven inches. In their general aspect they resemble the Squirrel.

Between the rocks subjected to the flow of water, the smaller Weya (*Lacis dichotoma*, Schomb.) grew in abundance. By night some of the fallen leaves on the ground appeared to be covered with phosphoric light; their number had considerably increased during the last night. I had never observed this phosphorescence before, and ascribed it to a Cryptogamous plant called forth by the incessant rain. The ground about our tent was quite illuminated; not only leaves but likewise smaller branches which lay on the ground exhibited the whitish light. But this was not the only wonderful production of the rain; the latter had loosened the tongues of all the Frog kind in the vicinity; and, to judge from the variety of their cries, the species were numerous. The cry of some resembled the bleating of calves, others the chirping of birds, the call of the Duck, and even the hoarse voice of Man to a considerable degree; but the most

*At a meeting of the Linnæan Society on March 20, 1838, "A Description of the Mora-tree," by Dr. R. H. Schomburgk, communicated by George Bentham, Esq., was read, in which it was stated that the tree is a native of British Guiana, where it attains a large size, the trunk often exceeding ninety feet in height, with a circumference of upwards of twenty feet. The trunk produces large buttresses at its base, which from their partial decay afterwards become hollow beneath, and form a chamber capable of sheltering several persons standing erect. The tops of these buttresses and the trunk itself are found clothed with innumerable epiphytes, which greatly add to the singularity of the tree. The tree affords timber of excellent quality, being close-grained strong, tough, durable, and not liable to split. The Mora constitutes a new genus of the order *Leguminosæ*, belonging to the sub-order *Cæsalpineæ*, and tribe *Cassiæ*. Mr. Bentham adopts the native name for the genus, and proposes that of *excelsa* for the species.—H. B.

remarkable among the strange crew was "the Paddler," whose quacking voice resembled so much the regular stroke of a paddle, that it deceived one of our party entirely, when he heard it for the first time. It lives on the land, and, as I am informed, is nearly the size of *Rana paradoxa:* it has long yellowish legs; a brown body, spotted with black; and its abode is generally an old tree, until the night invites him to his ramble and exercise of vocal power.

The rapids became more frequent and the river contracted considerably, till they at last arrived at the great cataract of the Essequibo, which Dr. Schomburgk has called "King William's" cataract, in honour of his late Majesty, then patron of the Royal Geographical Society. Here the party were obliged to bend their course down the stream again, and after an absence of about six months arrived at George's-town.

Here I must close my abstract, as I fear I have already taken up too much of your space with my remarks. I hope, however, that I have made the abstract so interesting as to induce many of the readers of *The Naturalist* to follow Dr. Schomburgk in his expeditions, which they will find at length in the *Journal of the Royal Geographical Society of London*. The Report of his first expedition will be found in Vol. VI., part 2, 1836; the "Diary of an Ascent of the River Corentyn," in Vol. VII., part 2, 1837; and the "Diary of an Ascent of the Berbice," in Vol. VII., part 2.

Among other collections in Natural History made during these expeditions (besides what have been lost), about 120 specimens of birds have been sent to the British Museum. Also a collection of about 8,000 plants, consisting of nearly 400 species. Seeds have been sent to the Horticultural Society, and a considerable number of Orchideous plants in a living state. Dr. Schomburgk surely deserves a place in "The Naturalist's Portrait-Gallery."

Law-Park Cottage, near St. Andrews,
April 11, 1839.

CURSORY REMARKS ON TROPICAL SEAS.

By Dr. Pöppig.

(Translated by Edwin Lankester, M.R.C.S.)

We were scarcely two degrees from Cabo Pilares, when we experienced a rapid and striking alteration in the temperature both of the land and of the sea. As the South wind was still blowing with an undiminished degree of cold, this phenomenon could only be explained by the occurrence of currents from the

Archipelagos of the Chonos and Guayatecas, which, on reaching the ocean, meet with others that periodically proceed from the N.W. Although the existence of the latter has been indisputably demonstrated in the latitude of Middle Chili, yet we experienced in them no obstacle to our course, for it was not till we were in the latitude of Valdavia, and had reached 77° W. Greenwich, that we took a N.-E. direction towards the port. Sailing again became very pleasant, for our rapidity was seldom less than eight miles an hour, and a bright sky—the pure blue of which was only interrupted, during the morning and evening hours of the day, by flying clouds—informed us that we were approaching the celebrated climate of the American Italy. Our indefatigable companions, the Albatrosses, which had accompanied us in all weathers, from the Patagonian coast, gradually diminished in numbers, and entirely disappeared when we had reached the 36° latitude. Though the sky, here, does not possess the brilliant splendor of Equatorial regions, it has an extraordinary and peculiar transparency, and the sea is not without its wonders of the animal world. We met a broad shoal of beautiful Dolphins,* which were striped black and white: their numbers were so great as to appear almost incredible, and their extent could not be discovered from the mast-head. We had them around us for several days, and their playful leaps into the air, and rapid dartings along the water, amused us in our idle moments. They are far more wary than other species of the same genus, so that only one could be harpooned, the flesh of which became the property of the sailors. The shoal extending in a S.-W. direction renders it very difficult to assign the true reason of their migration, as the seas in that part must in a few weeks have been overtaken by the Antarctic Winter.

Another phenomenon attracted still more attention. On the 12th of March, about mid-day, we were not a little alarmed at a considerable noise on deck, and a command for the vessel to lay-by immediately. The dirty red colour of the sea had led to the well-founded suspicion that we were in shallow water. However, the sounding-line discovered no ground at a depth of 130 fathoms. The sea, as far as the horizon even from the topmast, appeared of a dark red colour, and in a stream whose breadth was estimated at about six miles which occasionally divided itself into short lateral branches. Whilst sailing slowly on, we found that the colour changed into a brilliant purple, so that the foam which constantly collects at the stern of a sailing vessel was of a rosy-red colour. The appearance was now very striking, as the purple stream was sharply divided from the blue sea, a circumstance we could the more easily observe as our course lay directly through the extended stripe between the N.-W. and S.-E. The water, when drawn up in a bucket, appeared quite clear, but a faint purple colour was

* *Delphinus leucoramphus*, Illig.

observable when a few drops were moved quickly backwards and forwards in the rays of the sun, upon a piece of white porcelain. A moderate magnifier demonstrated that these little red points, which with great attention might be seen with the naked eye, consisted of Infusory animalculæ, which were of a circular form, and entirely destitute of external organs of motion. Their very animated movements were only upwards and downwards, and constantly in spiral lines. The want of a strong microscope prevented more delicate researches, and probably all attempts at drying such animals on paper would fail to preserve them, as in this instance they appeared to dissolve away into nothing. To nitric acid they were remarkaby susceptible; for a single drop mixed in a glass of this living water, in almost the same moment terminated the existence of millions. We sailed for four hours, at the rate of six miles an hour, through this seven-mile-broad stream, before we reached the end, so that its surface was about 168 square miles. If we suppose these minute creatures extended only six feet below the surface of the water, the enormous number of the whole quite oversteps the power of the human mind to grasp. It is hardly probable that these animalculæ were the occasion of the migration of the Dolphins above mentioned. This colouring of the water of the sea has been observed now and then in other districts,* but off the coast of Chili it seldom occurs. In the more Northern parts, and in the Pacific ocean lying near the Equator, as in the Gulf of Panama, and even on the neighbouring coast of California, they are of more frequent occurrence. Amongst the great number of sailors who pursue their business on the coast of Chili and Peru, and who during two or more years were questioned on this phenomenon, only one had ever known it to occur, and that about the same time of the year, on the coast of Valdavia.

HABITS OF THE RAT.†

By a Student of Nature.

Zoology is really the most interesting branch of Natural History, though I fear a novice taking up one of our present text-books on that subject, would

*Amongst others Capt. Kotzebue, in his first voyage round the world, saw a remarkable stream of coloured water off the coast of Brazils somewhat to the South of Cape Frio. On the surface of the sea there appeared a serpentine way of a dark-brown colour, two fathoms broad, and reaching as far as the eye could see. The water contained a countless number of microscopic *Crustacea*, and the seeds of a plant which, according to the assertion of the naturalists of the expediton, grew only at the bottom of the sea. These last were probably animalculæ, related to those above described.—Kotzebue's *Entdeckungsreise n. d. Südsee und der Behrings-strasse.*

† We insert this paper from the *Dublin Medical Press* with great pleasure, not only on account

hardly suspect it to be so, in consequence of these being, almost all, mere manuals of classification, seldom touching upon that most engaging part of the subject—the natures and habits of the animals described. This branch of Zoology can be treated with success by those alone who have long, carefully and minutely observed those animals whose habits and propensities they would attempt to delineate; and as, in order to succeed in this, the animals should be brought, as nearly as possible, to imagine themselves still in a state of nature, it will readily be perceived that full and complete acquaintance with the habits of animals can be looked for only as respecting indigenous species.

I have had, at different times, in my possession nearly every animal to be met with in England, Ireland, and Scotland; and in but one or two instances did I fail of producing complete domestication. I have had the Fox following me like a Dog in my chamber and the fields;—I have had the Badger (*Ursus meles*) playing with a puppy at my fire-side,—the Polecat sleeping upon my knee, and nearly devoid of unpleasant odour!—white and brown varieties of the Norway or Common Rat at liberty in my apartment, and as playful as kittens; Ferrets, Weasels, Squirrels, Mice, Shrew-mice (*Sorex*), Dormice, Dogs of most of the rare kinds, as the bloodhounds of Britain, Africa, and Cuba; the boar-dog of Germany; the Wolf-dog of Russia and that of Spain; the old English Talbot hound; the naked Dog of Turkey; the Tiger-hound of India; the Peruvian greyhound, &c. &c., all of the most undoubted purity, and the finest specimens of their kinds.

Having made these pursuits the occupation of my life from my earliest years, and having myself derived from them the greatest gratification, I feel it no small pleasure occasionally to present the public, or rather the scientific public, with a short sketch of the habits and instincts of some one or other of my interesting favourites—especially of those in whom I have discovered habits not generally attributed to them.

I had just succeeded in producing a cross-breed betwixt a large male Polecat (*Mustela putorius*) and the common Ferret (*M. furo*), and thus found my little menagerie suddenly increased by the acquisition of a litter of mongrel Ferrets. When these little creatures became a couple of months old, having already entered them at Mice, I wished to try their prowess with a Rat, and for this purpose gave directions to a neighbouring miller—whose granaries were sorely infested with these depredators—to catch and send me some of them. He soon sent me five or six of them, in a large wire cage, which was of that description that suffers a Rat to enter, and then renders it impossible for him to escape, yet

of its intrinsic interest, but also as a proof that the "Emerald Isle" can at least produce *some* true lovers of Nature.—Ed.

without inflicting the slightest injury. Being at dinner when the cage arrived, I desired it to be left in the yard until I should be at leisure, and in about a quarter of an hour proceeded to my experiment. On examining my captives, I found they had been fighting, and that one—a small and particularly beautiful Rat, of a very dark colour—seemed likely to fall a victim to the ferocity of his fellow-prisoners. The first thing I did, therefore, was to remove him from such dangerous company; to effect which with greater security, I contrived to get his tail between the wires of the cage, and then tied a piece of twine firmly, yet not too tightly, round it near the root. His colour, I now saw, was of a greyish or bluish black, the stem of each hair being of a slate colour, and the tip black. He had four toes on his fore-feet and five on his hind, and at the inside of each fore-foot was a sort of abortive claw, somewhat in the place where a thumb would be found in some animals. His eyes were very prominent, and, notwithstanding his excessive terror, sparkled with uncommon lustre. His tail was about the same length as his body, or perhaps rather longer, and more furnished with hair than is the case with the common species, in whom this member usually presents a scaly and naked appearance. The belly was whitish, and the sides darkening in colour towards the middle of the back. In short, as my readers will have already seen, I had had the rare good fortune to get a specimen of the Black Rat—the indigenous British Rat, now nearly—indeed some say entirely—extirpated by its more powerful and fiercer Norwegian invader.

He was indeed a beautiful creature, and I determined that, instead of his becoming a meal for my Ferrets, he should rival them in my care; and I was the more sanguine in the hope of taming him, as his teeth marked him to be young, which was also indicated by his small size, measuring only four inches and a-half from the tip of the nose to the beginning of the tail, which was about five inches in length.

Now, when I mention my method of taming this Rat—a method successful not merely in this case, but also with other Rats, Brown and white, which I afterwards procured—I am pretty certain you will smile; but, instead of smiling at me, which *anyone* CAN do, I should be glad if you would explain the effects my treatment produced, which I believe *anyone* can NOT do—at all events I can not. You shall hear it, however, and then form your own conclusions.

I got a bucket of cold water, and placing it on a chair beside me, held my captive in one hand, and began gently stroking him with the other. A bite was, as you may well suppose, his most uncourteous return for this piece of civility, and I accordingly instantly plunged my little captive into the bucket, holding him under water until he let go his hold of my finger. I further suffered him to remain swimming about the bucket until nearly drowned; when I took him, and

laying him on my hand, in my pocket handkerchief, warmed and cherished him until he became again dry.

This discipline I repeated whenever he attempted to bite me; and after a few such duckings his disposition to do so became so completely eradicated, that I could handle him with perfect safety to my fingers, and after his two or three last punishments he would sit upon my knee, and dry himself with his tongue and paws as contentedly as if he were in his own nest.

It would be tedious to describe the progressive stages by which he arrived at a state of absolute domestication; I shall therefore suppose him finally tamed, and give some account of his behaviour when he became so.*

Within three months from the day I got him, he became so gentle and so perfectly satisfied with his situation that I could suffer him to run about my room, and even take him out into the fields with me, as I used to do with my Squirrel, and allow him to amuse himself often for an hour at a time, as I lay upon the Grass reading, and, as in the case of the former-mentioned animal, a chirp would always recal him; indeed he seldom ventured far from my side, and the slightest noise would send him scampering to me, hurrying up my back or arm, according to my position, and into my bosom, next my skin—a strange nest for a Rat, you will say; and so, doubtless, it was; yet I can safely affirm that while there he never was guilty of biting or dirtying me, or any other act which would render his being offensive.

He possessed great curiosity, and would examine every strange object he met with, much in the manner of a Dog. He disliked strangers, and would bite them if they attempted to meddle with or handle him, especially while eating, but was fond of playing with a little boy, a younger brother of my own, who was in the house. If I scraped with my fingers upon the carpet, he would squeal and gambol towards my hand like a playful kitten, performing a variety of antics that would have done credit to a Monkey, often tumbling head over heels, three or four times in succession, every caper being accompanied with a shrill squeak.

His diet generally consisted of bread and milk; meat he would eat, but not in preference, as he would at any time reject it for oatmeal or milk; cheese was also a treat to him, but Wheat in a whole state was a perfect luxury.

By the time I had had this little fellow about five months, I began to wish for a Brown Rat to tame and keep with him for company; but before I procured one, I received a present of a very fine white Rat from Greenock, which I also speedily domesticated as I had done the former. This, I may observe, was

* We certainly cannot recommend for general imitation this somewhat barbarous mode of "taming" any animal. However, *de gustibus*, &c.—Ed. *Nat.*

the albino variety of the Norway Rat, and not of the indigenous or Black species.

His habits were pretty similar to those of the Black Rat, but characterised by greater wickedness; his bites were far more furious and obstinate than the other's, and he was less affectionate, appearing to owe his own tameness more to dread of punishment than to fondness for me. The two Rats agreed pretty well together while at large in the room, but neither would suffer the other to approach close without a bite—and in these encounters the Black Rat always came off second best; indeed, no wonder, the white one being seven inches in length, and his tail six. The latter always preferred animal food when it could be got; drank less milk; and had an offensive smell, which the other had not.

Ere I had my new guest a fortnight, I got possession of a prodigious Norway Rat in the following manner:—I had, as I hinted in the commencement of this paper, a tame Polecat, a very amusing, though frequently troublesome companion —for insisting, as it did, on following my steps everywhere, I was in constant dread of its gaining access to my "Rattery," and destroying my Black and white pets. I had occasion one morning early to visit a cellar at the lower part of the house, whither "Jemmy," as the Polecat was called, had followed me, when just as I opened the door, a monstrous Rat hobbled, rather than ran, across the floor—one bound, and "Jemmy" had it by the nape of the neck; but, having been struck with its great size, I seized the captor before he had time to injure his prey, and by dint of a good throtling, succeeded in rescuing it—not, however, without receiving a bite from the disappointed animal, the mark of which I bear to the present hour upon my thumb. I had very little difficulty in taming this Rat; fear soon left him, and my only remaining difficulty was to cure him of biting, which, however, I never could entirely do. He was excessively fat, and apparently incapable of much exertion; sulky, peevish, and unconquerably insolent: these points of character were frequently exhibited in a very amusing light.

As to the other two Rats, while they kept at a respectful distance, he took but little notice of them; but if they came too near they were sure to suffer; and had his activity been equal to his strength, he would probably have killed both. His length was thirteen inches and nearly a quarter of an inch! and his tail nearly a foot long! he weighed 2 lbs. 1 oz., avoirdupois! I showed him to several persons who declared that such a Rat they had never seen; such another I never saw living, but I once saw a stuffed specimen in a museum belonging to one Caffrae, measuring 18 inches in length, and the tail 16! that, however, was labelled as a *native* of Norway, not, as mine was, a *naturalized animal.* This Rat preferred flesh to any other food, and would, in the absence of such, devour candles, soap, or any article of an unctuous nature that came in his way. I once

tried the tempers of the three animals in the following manner:—I had found a nest of about half-a-dozen Field Mice, two of which I introduced into the cages of the Black, white, and Brown Rats. The Black Rat only examined the strangers with his nose, seemed disposed to play with them, and the three became immediately great friends. The albino Rat paid no attention to the Mice until they approached him, when he seized upon and killed them both, but did not devour them. The two which I introduced into the cage of the Brown Rat fared still worse; for, springing upon them the instant he saw them, he destroyed and devoured them.

Their battles, it may be observed, are noisy, being always accompanied with a hissing scream, and often a succession of squalls.

I once introduced a young kitten into the room where the three Rats were at play. This kitten was too young to destroy either of my pets, yet sufficiently grown to afford me room for observing how each would act when in the presence of his natural enemy.

The Black Rat, on perceiving the Cat, sprung to my knee, and sought the concealment of my bosom. The white Rat at first fled, but afterwards cautiously returned, reconnoitering the enemy from a safe distance.

The Brown Rat, on the other hand, approached her slowly with bristles erect, and then with a single spring, heavy and unwieldly as he was, reached her head, and, fastening on poor pussy's nose, rolled her over and over on the carpet, and was so much excited also as to revenge my interference in taking him off, by a bite after his own fashion, which remained painful some days; and this I in my turn recompensed with a severe but well-merited ducking.

Frequently, while reading in my study during the evening, the three Rats (usually at large while I was in the room) would climb upon my table, and torment me with their insatiable curiosity—the edges of my book would be well clawed, and, indeed, sometimes nibbled. If I were taking tea at the time, which I generally did alone (not having time to waste) in my study, they would take advantage of my being absorbed in my book, to attack my bread and butter, sip my tea or coffee, and perhaps everturn the cup over my papers; and these acts being commonly the work of a moment, while my attention was engaged, I had no help for it but to confine the little nuisances, a thing I was always loath to do while it could be avoided.

I used to get rid of my little Black pet's annoyances by placing him in my bosom or pocket, where he would speedily fall asleep. A tap with my finger would put the white gentleman to flight, but as for my Norwegian friend—a fillip from my finger would be repaid with a bite; and the oftener I would push him off the table, the more obstinately would he re-ascend to tease me; and after a few such pushes and returns, he would fly into a passion, and seizing any

paper or pen he could lay hold of with his teeth, would shake it violently, squealing all the while in a paroxysm of fury. So that, to end this, he, at all events, used to get himself shut up until I was at leisure.

Although all these animals were tame as I could desire, still the Black Rat in particular, by his engaging manners and gentle docility of disposition, actually obtained a hold on my affections little inferior to that which a faithful Dog might be supposed to possess, and the attachment appeared reciprocal.

They were all very cleanly animals, and spent much of their time in washing and cleaning their fur in the manner of a Cat. I made several attempts to introduce a female to them, but the Brown Rat would admit of no stranger coming amongst them.

Having given, in as succinct a manner as I could, this account of the habits of the three Rats, and their several dispositions, I shall now conclude with the manner of their death :—

My gentle friend, like most pets, came to an untimely end, in this manner :— I had to encounter great opposition from my stepfather—a clever man enough in his profession, but one of the very old Scottish school of medical men, and he conceived that instead of devoting any of my time to the study of Zoology, I should give my undivided attention to the acquisition of mere medical knowledge, not regarding (as the more enlightened and scientific of the faculty do) Zoology to be in any way connected with that profession. This opposition was frequently displayed in insisting on a disbandment or removal of my menagerie ; and on this occasion I was ordered to destroy, or at all events remove all my pets, save "Jemmy," the Polecat, whose good temper, playfulness, and freedom from smell, had rendered him a favourite with my mother, on whom it of course devolved to see the doctor's orders carried into effect.

My white Rat, accordingly, got a dose of prussic acid, and his body was sent to the Edinburgh University museum, to Mr. W. Jameson, nephew of the professor of Natural History.*

I brought the Brown Rat out of the house, and (of course unknown to any one) set him at liberty. Next day, however, the housemaid while making my bed discovered him between the blankets ; he had imbibed, like my Squirrel (mentioned in a former paper), a dislike of liberty, and had returned to his old quarters ; only, however, to die—for the woman, in her terror at seeing a Rat of such magnitude sitting on the bed and deliberately staring her in the face as if wondering what the deuce she wanted with him—rushed screaming from the room, left the door open, and let in "Jemmy," who was always ready for mischief.

* As I have mentioned Professor Jameson, I cannot continue my paper without taking this opportunity of expressing my gratitude for his kindness to me on many occasions, in connection with the advancement of my favourite study.

I just reached the room in time to meet the Polecat coming out at the door with the Rat quite dead in his mouth; this time my friend had made sure work of it, and I left him with his prey. I have now only to describe the end of my favourite Black Rat.

Feeling quite unable to part thus suddenly with this interesting creature, I placed his cage upon the leads which were within reach of my window. (The Edinburgh houses are built differently from those in Dublin.) In this he passed the day, and at night my bed was still, though of course "*sub rosâ*," his place of repose—and he came to know the hour when I would bring him in so well, that if I suffered it to pass by without doing so, he would, in the course of an hour, commence gnawing the wood of his cage, as if endeavouring to obtain his liberty and seek his forgetful master.

One night, having been out late at a scientific meeting, I went hastily to bed on my return without thinking of my poor Rat. In the morning I found a hole gnawed through the box, and himself away—I searched every place for him, for I knew he would not have willingly deserted me, and I at length found him on the ground beneath, stiff and dead. He had fallen from the leads on getting out of his cage.

BOTANICAL NOTES.

PRINCIPALLY FROM THE HERBARIUM OF THE LIVERPOOL BOTANIC GARDENS.

BY T. B. HALL.

BRYOPHYLLUM CALYCINUM.—There is a leaf of this plant in the Herbarium at the Liverpool Botanic Garden, with the following note by the late Mr. J. SHEPHERD:—"I laid down the large leaf of this curious plant on the 18th of April, 1814; I first observed it to begin to produce the young plants round the edge on the 23rd of May; and although in the press amongst other specimens, yet they continued to grow until the 20th of July; out of the 20 dents, it produced 17 plants." This curious plant is a native of the East-Indies, and belongs to the natural order *Semperviveæ*.*

Pimpinella dioica.—This rare plant is a native of the rocks at the Hotwells (Bristol), where it grows but sparingly. In a botanical excursion with Sir T. CULLUM and Sir W. WATSON, A.D. 1789, I found one specimen, and in a subse-

* The derivation of the generic name—*bryo*, to grow, and *phyllon*, a leaf—is very appropriate, on account of the tendency which the leaves have to produce young plants.

quent year two more specimens. JACQUIN's figure represents the stem more thick, and shorter than I have them. The habit of the plant appears to me better marked in the old figure of GERARDE.—Col. VELLEY's MS. notes.

Cicuta virosa.—The various synonyms of writers have tended to confound this poisonous plant. The reduced figure in the *Flora Danica* conveys no idea of the character of it; but we find a good figure in the *Philosophical Transactions*, from an accurate drawing of the celebrated EHRET, with the fructification. He has also drawn *Œnanthe crocata*, the most virulent of our vegetable poisons, and growing in abundance about Bath. The deleterious quality of the latter is so strong that I would not preserve it. Mr. WATSON, who has described these plants in the *Philosophical Transactions*, says that Mr. EHRET, when he drew *Œnanthe crocata*, was affected with an universal uneasiness and vertigo.—Col. VELLEY's MS. notes.

Athamanta Libanotis.—Mr. RELAN informs us that this plant had remained long sought-after without being discovered, till he became the fortunate restorer, A.D. 1783. It is a native of Cambridgeshire; from whence my specimen was brought in a very young state, and transplanted. The involucellæ are equal in extent to the smaller umbels. See the remarks of LINNÆUS on the lateral umbellæ, *Flor. Cantab.*, p. 113.—Col. VELLEY's MS. notes.

Sium latifolium.—JACQUIN observes that in proportion to its breadth, the leaf has a more narrow form than *S. angustifolium*. The trivial names are not appropriate. I am inclined to think this species would have been better discriminated by the term *longifolium*. Both species are common in several parts of Somersetshire.—Col. VELLEY's MS. notes.

Tilia Europæa.—There are specimens of this tree, with the following note of Sir J. E. SMITH :—"From a famous tree, some of whose leaves every year have been peltate or hooded since the Monks of an adjoining convent were hanged upon it. '*Credat Judæus apellas!!—vel Christianus cucullatus.*' The locality where this very wonderful tree grows is at Zedlitz, near Guttenberg, not far from Collin, in Bohemia."

Echium vulgare.—The spikes have a singular deflection in some specimens, which character is only observable in the upper spikes. Dr. SMITH, although he resides at Norwich, does not describe *Echium violaceum*, said to grow in the vicinity of that place. This circumstance affords a satisfactory instance of his precaution, as it may be presumed he was not satisfied as to the species, and therefore has not introduced it on the authority of another.—Col. VELLEY's MS. notes.

Agrostis alba.—This is so various a Grass that Mr. KNAPP has called it *mutabilis;* what is this but a similar term for Mr. HUDSON's *polymorpha?* LEERS describes it "*verticillis densis,*" and having peduncles suberect and flexuose.

This author follows Mr. Hudson in making it a variety of the supposed *capillaris*, *i. e.*, our *vulgaris*. Dr. Smith considers *A. alba* as one of Mr. Hudson's varieties under *A. polymorpha*.—Col. Velley's MS. notes.

A. pumila.—I consider these specimens curious, inasmuch as they show Mr. Hudson's discrimination, since confirmed by the opinions of Dr. Smith and Mr. Knapp, in placing this variety under the same arrangement as *A. capillaris*, *i. e.* our *vulgaris*. Dr. Smith observes that *pumila* is the production of sterile and exposed situations. These specimens confirm his remark. I gathered them both from the same tuft on the summit of Glydir Vaur, North-Wales.—Col. Velley's MS. notes.

Agrostis stolonifera.—The stoloniferous character is very evident in this plant. Dr. Withering describes the panicle as compact, and thickly crowded with florets at the base. Linnæus notices the equal valves of the calyx; the outer one of which is serrated. Both these circumstances are observable in the above specimen. It should seem that Leers has had another species in view for *stolonifera*; his figure, tab. 4, f. 6, represents our variety *pumila*, which answers with Curtis's supposed *capillaris*, as I have already shown. The description of Leers totally disagrees with Withering's; for he says "*panicula pauciflora*," and calyx unequal. He also describes the footstalks as "*undulato divaricati*," which correspond with those of var. *mutica*.—Col. Velley's MS. notes.

Festuca vivipara.—Mr. Knapp, who has investigated the Grasses with a Lynx's eye, is the only author I have met with who observes that the inner valve of the corolla is wanting, not being necessary, as in other species where the fructification requires protection. This protecting economy of the inner valve is remarkably apparent in the *Bromi*. The small valves which are indicated by asterisks are the exterior ones of two distinct floscules, with the rudiment of the viviparous germ, which possibly would have constituted the inner valve if the metamorphosis had not taken place. Mr. Knapp has properly noticed the luxuriant growth of this Grass on *L'eau-d'or* Lake (Lowdore), where I gathered the above specimen, which runs counter to its more general character—"*Panicula abbreviata subsimplex secunda*," *Fl. Brit.*, 115. It is observed also in the *Flora Britannica*,—"*Spiculæ plerumque mollissimè pubescentes*;" but in those specimens which I have found, the spiculæ were nearly, if not entirely glabrous.—Col. Velley's MS. notes. Mr. Henry Shepherd observes in some specimens which he procured from Ingleborough, that the spiculæ are nearly glabrous, and that the pedicles are scabrous in a moderate degree.

Coggeshall, Essex,
March 1, 1839.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe," Part II.

By Shirley Palmer, M.D.

(Continued from p. 411.)

Griffon Vulture, *Vultur fulvus*,—le Vautour Griffon, *Fr.*—Avoltoio di-color-castagno, *It.*—Weissköpfiger Geier, *G.*—An excellent drawing of it is given in the second plate of the first *livraison* of Werner's *Atlas*. This fine bird—*le Griffon* of Buffon, and, in its immature state, *Vultur Kolbit* of Latham, and *le Vautour chasse-fiente* of Vaillant—inhabits Turkey, the Tyrol, Alps, Pyrenees, South-Europe, and the Northern regions of Africa. It abounds particularly in the vicinity of Gibraltar. The nest is formed in inaccessible rocks and precipices. The eggs are greyish-white, marked with spots of a reddish-white colour.

The Puffin, *Mormon fratercula* of Temminck, *Alca Arctica*, Linnæus,—*Labradora*, Gmelin,—*Fratercula Arctica*, Stephens,—and *Puffinus flavirostris* of ornithological reformers. This singular bird—the Puffin Auk and Labrador Auk, of Latham, *le Macareux*, and *Macar. moine*, of French,—der Arktische Alk, and Graukehliger Alk, of German, naturalists—formerly arranged among the *Alcæ*, now constitutes the type, and only European species, of the genus *Mormon* of Temminck. The following are the distinguishing characters, as traced by that celebrated ornithologist:—"*Beak* shorter than the head, more deep than long, and much compressed. Both mandibles arched, transversely furrowed, and notched at the tip; the ridge of the superior mandible acute, and elevated above the level of the cranium. *Nostrils* lateral, marginal, linear, bare, and nearly closed by a naked membrane. *Tarsi* short, retracted in the abdomen. *Toes* three only, anterior, and completely webbed. Nails (especially the two internal) much hooked. *Wings* short: first quill-feather as long as, or a little longer than, the second." The Puffin, although extensively inhabiting the Polar regions, is, with us, known only as a Summer-visitant. It arrives on the coasts of Britain about the middle of April, and takes its departure for the South of Europe about the second week of August. The single egg, of a dirty-white colour, is deposited in a burrow of the earth formed by the male, and frequently provided with a double entrance. It is almost exclusively an aquatic bird; and feeds principally on the smaller fishes, marine *Crustacea*, and plants. The Northern Puffin (*Fratercula glacialis*, Leach), distinguished only by the inferior size of the beak, is regarded, by Selby, as a young bird of this species: for the organ, he observes, does not attain its full strength and development till the expiration of the second

or third year. Mr. Gould has delineated, in this plate, figures of the adult male and female Puffin, in his wonted style of excellence. The specific epithet, *flavirostris*, is obviously preferable to *Arctica*.

Black-headed Bunting, *Emberiza melanocephala*,—Bruant crocote of Temminck, Fringille crocote, Vieillot.—This bird inhabits the Southern provinces of the East of Europe; is very abundant in Dalmatia and the whole of the Levant; common in Istria, the environs of Trieste, and the declivities of the hills which skirt the Adriatic. An agreeable songster. Feeds on the seed of wild plants, grain, and insects. Builds in low bushes; and lays four white eggs, sprinkled with minute specks of a light ash-colour. The bird is distinguished from the other species of Bunting by the *deep-black* colour of the summit of the *head* and region of the eyes and ears of the male. Hence the specific name. The female has all the superior parts of a reddish-ash colour. Nothing can exceed, in accuracy of outline, and splendour and softness of colouring, the two figures here delineated by Mr. Gould.

Hooded Merganser, *Mergus cucullatus*.—One specimen only, either a young female, or, in Mr. Gould's opinion, more probably an immature male, has yet been taken in the British islands. It was killed in Norfolk, in 1829; and first described by Selby in the *Transactions of the Natural-History Society of Northumberland*, and subsequently in the second volume of his *Illustrations of British Ornithology*; to which, and to Richardson's *Fauna Americana Borealis*, the reader is referred for a more particular description of the bird. The head of the male exhibits a crest composed of two separate rows of feathers radiating from each side, and easily divisible by the hand. That of the female is furnished with a "small crest of slight hair-like feathers, of a dull ferrugineous brown." This bird—*le Harle couronné* of Buffon, but not described by Temminck—is a native of the Northern regions of America and Europe; and strikingly resembles, in its character and habits, the other species of the *Mergus* genus. The two figures, male and female, of Mr. Gould are executed with marvellous spirit and and fidelity.

Bee-eater, *Merops apiaster*, Linnæus,—*chrysocephalus*, Latham,—Guêpier vulgaire, *Fr.*—Bienfresser, *G.*,—forms the subject of this exquisitely-coloured plate. It is the only European species of the genus; inhabits the Southern regions of Germany, Switzerland and France, Spain, Sicily, the Archipelago, and Turkey; and migrates, in Autumn, towards Egypt. It is merely an occasional visitant of the British islands.

On the expediency of separating the Wheatear—*Saxicola œnanthe* of Bechstein,—Traquet moteux, *Fr.*—Culbianco, *It.*—Graurückiger Steinschmatzer, *G.*—from the two other British species with which it has been commonly associated, and transferring it, as Ray and Brisson have done, to the genus *Vittaflora*, we

are exceedingly sceptical. What, we would beg leave to inquire, are the peculiarities of structure which call for, or justify, this innovation? The propriety of its removal from the *Motacillæ* and *Sylviæ*, with which it was respectively arranged by LINNÆUS and LATHAM, no enlightened ornithologist will for a moment question. The Wheatear is principally distinguished from its ancient congeners, by the "*snow-white* mark across the base of the *tail*;" and hence has received, from good old BEWICK, the homely but expressive name of *White-rump*. The specific designation, *albicaudata*, or *albicoccygea*, would, consequently, be far more applicable and characteristic than *œnanthe* of the older, or *cinerea* of modern, ornithologists. The British Wheatear is a migratory bird; arriving in March, and quitting in September. GOULD's two figures, illustrative of the sexual diversities of plumage, are finely executed.

TURTLE DOVE, *Columba turtur*,—Colombe tourterelle, *Fr.*—Tortora commune, *It.*—Turteltaube, *G.*—A specimen of the adult male, drawn and coloured with surprising skill and accuracy.

PINTAILED SAND-GROUS, *Pterocles setarius*, TEMMINCK,—*Tetrao alchata*, and *T. caudacutus*, of LATHAM and GMELIN,—le Ganga cata, *Fr.*,—inhabits the Southern countries of Europe, the sterile districts which skirt the Pyrenees, and the borders of the Mediterranean; and visits, at uncertain periods, the Southern provinces of France. It is a very handsome bird; and distinguished from the only other European species, *P. arenarius*, by the extraordinary length of the two slender feathers situated in the middle of the tail. Hence the English specific designation; and the obvious propriety of substituting the Latin adjective *caudacutus*, for the *setarius* employed by TEMMINCK. The species of this genus constitute the genus *Œnas* of VIEILLOT; and belong to the *Tetraonidæ*, or *Capricalidæ*, of modern ornithologists. Two specimens, an adult male and female, are admirably figured by Mr. GOULD. The bird is, also, prettily drawn and coloured in *Livraison* 25 of WERNER's *Atlas*.

THE SWIFT, *C. murarius*, TEMMINCK,—le Martinet de muraille, *Fr.*—Rondine maggiore volgare, *It.*—Thurm Schwalbe, *G.*—Most of our readers are probably aware that this singular bird—with whose shrill scream, uttered in its rapid flight around the old grey church-tower in the glorious evenings of Summer, some of the best and brightest recollections of our earlier years are indissolubly blended—was arranged, by LINNÆUS, among the Swallows, under the title of *Hirundo apus*. Now the Swift, according to the established principles of zoological arrangement, is assuredly no Swallow: for the structure of the foot, with its four toes *all anteriorly directed*, suffices at once to distinguish it from every species of *Hirundo*; one of the generic characters of which is the existence of "*three toes before, and one behind*:" and the absurdity of designating by the epithet *apus* (footless) an animal which possesses feet, however small, is at once evident. The

propriety of removing the Swift from the Swallow genus, and assigning to it a new specific designation, cannot, therefore, be denied: but, respecting the manner in which this has been done, we have a "*Crow to pluck*" with our friend the Dutchman. Temminck's new term *Cypselus*, taken from the Κυψελος of the Greeks, is, in our opinion, far less apposite and precise than the compound, *Brachypus*, introduced by the German ornithologists; and literally signifying *Short-foot*. His specific term, *murarius*, is, moreover, vague, if not perfectly unmeaning. The *Wall* Swift, of Temminck, and the *Tower* Swallow, of the Germans, are terms, in fact, almost equally objectionable. Our well-known *Develin* differs principally from the only other European species of the genus in the *dusky colour of the whole inferior region of the body*. Why, then, not designate it by the terms *Brachypus* (or *Brevipes*) *melanogaster*, Dark-bellied Short-legs? The Common Swift is a Summer-visitant of the British islands; arriving about the end of May, and quitting, in August or Septemper, for more genial climes. The mode in which, without alighting on the ground, this truly aërial bird collects materials for the construction of its nest, is, at present, a subject of controversy. Our own observation leads us to believe that the object is principally accomplished by the fashionable process of "spoliation." Are not the organs of Secretiveness and Acquisitiveness largely developed in the broad and depressed cranium of the Swift and of its Alpine congener?

Alpine, or White-bellied, Swift, *C. Alpinus*, Temminck,—Martinet a-ventre-blanc, *Fr.*—Rondine maggiore, *It.*—Alpen Schwalbe, *G.*—This fine bird has, of late, been twice or thrice captured in the British islands; and is, consequently, now recognized as a British bird. A native of Southern Europe, the shores of the Mediterranean, the Archipelago, and Africa, it is larger than the preceding species, and distinguished from it by the *pure-white colour of the lower parts of the body*. Hence the French and English designation of *White-bellied* Swift is strictly applicable; and we should consequently propose the substitution of the scientific epithet *leucogaster* for that of *Alpinus*. *Brachypus leucogaster*, the *White-bellied Short-legs*. The only fault which we can possibly find with Mr. Gould's figures is that they are much too large. Bewick's drawing of the "Swift"—p. 296, Edition of 1826—is executed with admirable spirit and fidelity. Werner's *Livraison* 22 of the *Atlas*—is sadly defective in colouring.

A finely-drawn specimen of the male White Spoonbill, *Platalea leucorodia*, —la Spatule blanche, *Fr.*—Pellicano volgare, *It.*—Weisser Loffler, *G.*—It is the only European species of the genus; and merely an occasional visitant of the British islands. We greatly prefer to *leucorodia* the specific designation *nivea*, applied by Cuvier to this elegant bird.

The Dottrel, *Charadrius morinellus*,—*Sibiricus*, Gmelin,—*Tataricus, et Asiaticus*, of Pallas,—Pluvier Guignard, *Fr.*—Piviere de corrione, *It.*—der

Dömme Regenpfeifer, Morenel Regenpfeifer, *G.*,—is here presented in admirable fidelity of outline and colouring. The two figures presented by Mr. Gould illustrate the diversities of plumage in the adult and young bird.

Three-toed Woodpecker, *Picus tridactylus*,—Pic tridactyle ou Picoide, *Fr.*—Picchio a-tre-dita, *It.*—Dreizehiger Specht, G.,—is distinguished from the other species of the *Picus* genus by the *absence of the back toe:* and hence has been removed, by Swainson, into a new genus, under the title of *Apternus tridactylus*. See *North-American Zoology*, Vol. II., p. 301. In character and habits, it otherwise closely resembles its ancient congeners. It is common in the Northern parts of the European Continent, and the Swiss Alps; and occasionally visits France and Germany; but has never yet been seen in the British islands. The male bird is principally distinguished from the female by the existence of a golden-yellow patch on the crown of the head. A figure of each sex is admirably delineated by Mr. Gould.

Little Bustard, *Otis tetrax*, Linnæus,—*minor*, Ray,—Outarde canepetière, *Fr.*—Gallina pratarola, *It.*—der Kleine Trappe, *G.*—The Little Bustard, common in the Southern parts of Europe and North-Africa, is only an occasional and rare visitant of the British islands. It is now ascertained that the adult male resembles in its plumage, during Winter, the adult female and the young bird, and merely assumes, for the Summer-season, the characteristic markings of the male plumage. The two figures, given by Mr. Gould in illustration of these diversities of sex, are amongst the most admirably-executed in the whole work.

Great Shrike, *Lanius excubitor*, in the act of destroying a Dragon-fly. The colouring of the irridescent wing of the writhing insect is exquisite; and that of the destroyer itself is little less to be admired. The species—Pie-grièche grise, *Fr.*—Velia cenerea, *It.*—Grauer Wurger, *G.*—forms the type of the new genus *Collurio*, as constituted by Dr. Vigors, under the title of *C. excubitor*. The principal ground of separation consists in the rounded figure of the wing, which in the *Lanii* is more pointed; in the lengthened and graduated tail; and in the general superiority of size, of the species composing the genus *Collurio*. Other ornithologists retain the Grey Shrike in *Lanius*, and transfer its two British congeners to *Collurio*.

Pomarine Gull, *Lestris pomarinus*, Temminck,—*Cataractes pomarinus*, Stephens,—Le Stercoraire rayé, Brisson,—Pomarin, Temminck,—Felsen Meve, *G.*—This fine, powerful, and courageous bird, the Pomarine Skua of modern writers, and belonging to the *Laridæ*, was formerly included in the Gull genus. Two other European species, the Common and Arctic Skuas, now compose, with it, the genus *Lestris* or *Cataractes*. They are described by Bewick in a distinct section, under the title of "Predatory Gulls." The Pomarine Skua inhabits the Northern regions of both Continents; and visits, only, however, in its immature

state, the coasts of Britain. In this condition it closely resembles the Black-toed Gull, with which it has evidently been confounded by Bewick; but it may be distinguished from the latter by its greater size, the more robust figure of the bill, and its longer and more roughly-reticulated tarsus. The principal distinguishing character of the *Lestris* genus is the *elongation of the two middle feathers of the tail;* and, in our present species, *these feathers are rounded at the extremity.* It subsists upon fishes, and articles of food which, by pursuing and fiercly attacking the Gulls, it compels them to disgorge. Mr. Gould's figures of the young and the adult bird are boldly and finely executed.

Golden Oriole, *Oriolus galbula*,—Le Loriot, *Fr.*—Rigogole commune, *It.*—Gelbe Rache, Gelber Pirol, *G.*—The figures of the male and female of this rare and beautiful visitant of the British islands are exquisitely drawn and coloured. The only European species of the genus, it closely resembles the Thrushes in its structure and habits; and, consequently, belongs to the *Merulidæ.*

Still more admirably executed are the two figures representing, in its Summer- and Winter-plumage, the Little Grebe or Dabchick, *Podiceps minor*,—Grêbe castagneux, *Fr.*—Colimbo minore o Juffetto rosso, *It.*—Kleiner Steissfuss, *G.*—Five European and British species compose the genus *Podiceps*, as at present constituted. The subject before us is, as the specific designation indicates, the smallest; but size obviously affords a very crazy foundation whereon to establish a specific character. It would require more time and reflection than we can, at present, bestow on the subject, to select, or fabricate, an accurate characteristic term. *Melanogenius* would constitute a trivial term sufficiently precise and expressive; but the *black chin*, unfortunately—a distinguishing character only of the species when dressed in its Summer plumage—is inconstant, and therefore unavailable.

A correct and striking representation of the Pied Wagtail, *Motacilla alba*,—la Lavandière, Buffon,—Bergeronette grise, Temminck,—Cutrettola cenerea, *It.*—Weisse Bachstelze, *G.*,—it has never yet been our lot to meet with. The attempts of Bewick, Werner, and Selby also, if we recollect right, to delineate this sprightly and most elegant bird, are perfect failures; and even in the figures of Mr. Gould we are wofully disappointed. These figures represent the bird in its Summer- and Winter-plumage. In the former state, a large black patch covers the whole throat: in the latter, a slender gorget only of that colour is left. Why a really black-and-white bird should be designated *white* in Latin and German, and *grey* in French and Italian, it would wellnigh puzzle a special pleader satisfactorily to explain. Surely the specific term, *melanoleuca*, or *nigralba*, would more correctly designate the *Pied* Wagtail than the *alba* or the *maculosa*, hitherto employed.

A most masterly delineation of the Herring Gull, *Larus argentatus*,—

Goêland à-manteau-bleu, *Fr.*—Gabiano reale, *It.*—Weissgraue Meve, *G.*,—both in the young and the adult state. This bird is the Silvery Gull of PENNANT,—*Larus marinus*, LATHAM,—in immature age, le Goêland à-manteau-gris-et-blanc, of BUFFON,—in its Summer-plumage, *Larus glaucus* of BENICKEN, and Goêland à-manteau-gris, ou cendré, of the more eloquent than accurate French naturalist. It breeds along the rocky parts of the British coast.

Two admirably-drawn and highly-finished figures of the ROCK THRUSH, *Petrocincla saxatalis*, VIGORS,—Le Merle de-roche, *Fr.*—Tordo sassatile, *It.*—Steindrossel, *G.*,—terminate the *Second Part* of Mr. GOULD'S invaluable work. This beautiful bird, of which the male and female are here represented, although belonging to the *Merulidæ*, differs from the Thrushes, in frequenting the rugged declivities of rocks and mountains; and hence seems to constitute a connecting link between them and the *Saxicolæ*. It is *Turdus saxatilis* of LINNÆUS; was first removed, with *T. cyanus*, into a separate section, entitled *Saxicoles*, by TEMMINCK; and, at length elevated by VIGORS, to the dignity of forming a distinct genus, *Petrocincla*. It inhabits the central and Eastern parts of Europe; but has never yet been known to visit the British islands.

Recapitulation.—The twenty plates of Part 2 exhibit thirty-five figures, and twenty-one species of birds, belonging to twenty distinct genera. Five of these plates contain one figure, only, of the adult bird: the remaining fifteen, two figures each. Of these fifteen plates, one represents two distinct species; and the other fourteen display the peculiarities of plumage dependent on age, sex, or season, in two figures of one and the same species. Five of the species figured have never yet been known to visit these island: the remaining sixteen are British birds.

Birmingham, March 9, 1836.

ON THE HABITS AND PECULIARITIES OF BRITISH PLANTS, AND ON THE DERIVATIONS OF THEIR LATIN NAMES.

BY T. B. HALL.

(Continued from p. 427.)

CATABROSA.—Named from καταβρωσις, a gnawing, from the erose extremity of the glumes.

Catabrosa aquatica, Water Hair-grass.—SALISBURY observes that water-fowl are very fond of the young sweet shoots, as also of the seeds; it may therefore

be introduced into decoys and other places (by throwing the plants into the water with a weight tied to them) with good effect.

Caucalis.—Καυκαλίς, from καυκιον, a cup, on account of the shape of the flower; or perhaps corrupted from δαυκαλις. According to HOOKER from κεω, to lie along, and καυλος, a stem, *i. e.*, trailing upon the ground.

Centaurea.—From the Centaur, CHIRON, who is said to have established the reputation of one of its species as a vulnerary, having cured himself of a wound accidentally received by letting one of the arrows of HERCULES fall upon his foot.

Centaurea cyanus, Blue-bottle, or Corn-flower, Knapweed, Hurt-sickle.—Sir JAMES EDWARD SMITH says the wild flowers afford a beautiful blue for painting in water-colours, the expressed juice requiring only to be mixed with cold alum-water. The same author informs us that the separate floret in *English Botany*, coloured with this by way of an experiment, has now stood well for thirty years. Varieties of different colours are commonly introduced into our gardens as hardy annuals. Our plant was named *cyanus* after a youthful devotee of FLORA, whose chief occupation seems to have been loitering in the fields and weaving garlands with this and other corn-flowers; perchance occasionally permitting a truant thought to wander into a tender vein, though never inspiring sweeter lays than those of the English improvisatrice—

"There is a flower, a purple flower,
Sown by the wind, nursed by the shower,
O'er which Love has breathed a powerful spell,
The truth of whispering hope to tell.
Now gentle flower, I pray thee tell,
If my lover loves me, and loves me well;
So may the fall of the morning dew
Keep the sun from fading thy tender blue."

L.E.L.

Centunculus.—It appears that this name was anciently given to the Pimpernel, a genus allied to this; and derived, according to THÉIS, from cento, a covering, because it was a little weed that covered the cultivated fields.

Centunculus minimus, Small Chaff-weed or Bastard Pimpernel.—This is the smallest of all the British plants that have distinct flowers, the stem being hardly an inch high.

Cerastium.—Diminutive of κερας, a horn, from the rather long and curved capsules of some species.

Cerastium aquaticum, Marsh Mouse-ear Chickweed.—Abundant in moist places, and, being tender and succulent, it is not unacceptable to cattle.

Ceratophyllum.—Κερατοφυλλον, from κερας, κερατος, a horn, and φυλλον, a leaf, from the forked leaves.

Ceratophyllum submersum, Floating Hornwort, or Hornweed.—Mr. PURTON mentions this plant as having suddenly become very abundant in a pond (after the process of mudding), wherein it had been unknown before; and conjectures that till then the seeds must have been buried too deep for vegetation; a circumstance which, doubtless, in many instances, may account for the fluctuating appearance of plants.

Chærophyllum.—Χαιροφυλλον, from χαίρω, to rejoice, and φυλλον, a leaf, so called from the abundance of the leaves.

Chærophyllum sylvestre, Wild or Smooth Chervil, Cow Parsley.—The whole having the flavour of carrots, is eaten by domestic cattle, and is reported to be very grateful to Rabbits. The snow-white flowers, some of the earliest of their tribe, plentifully adorn the hedges and bushy margins of fields, in Spring, and announce the approach of Summer. The under sides of the leaves frequently exhibit the little Fungus *Puccinia Chærophylli*, scattered thickly in small round dots of a brown colour.

Chærophyllum sativum, Common Chervil.—It is cultivated in gardens as a potherb, and, as Father GERARDE has it, "the seedes eaten as a sallade, whilest they are yet greene, with oile, vinegar, and pepper, exceede all other sallads by many degrees, both in pleasantnes of taste, sweetnesse of smell, and holsomenesse for the cold and feeble stomach. The roots are likewise most excellent in a sallade, if they be boiled, and after dressed, as the cunning cooke knoweth how better than myself."

Chærophyllum temulentum, Rough Cicely, or Chervil.—The whole plant is sweetish and aromatic, acceptable to cattle. Having a spotted stalk, it is sometimes substituted for Hemlock; and the extract is sold for that of *Conium maculatum*.

Cheiranthus.—Χειρανθος, from χειρ, the hand, and ανθος, a flower, from the likeness of its blossoms to the fingers of a hand. According to HOOKER, named from the Arabic *Kheyry*, not, however, originally applied to this genus.

Cheiranthus Cheiri, Wild Wall-flower, Wall Gilliflower.—This well-known and acceptable flower has produced a considerable number of varieties in the garden, as the double, easily propagated by slips; and according to THOMSON—

> "The yellow Wall-flower, stained with iron-brown,
> And lavish stock, that scents the garden round."

But none which impart a more delightful fragrance than the wild one, to which a highly-gifted Northern bard alludes in describing the early days of the "grandame's child"—

> "And well the lonely infant knew
> Recesses where the Wallflower grew.
> I deem'd such nooks the sweetest shade
> The sun in all his round survey'd."
>
> *Marmion.*

The Wallflower has been considered the emblem of fidelity in misfortune, because it attaches itself to the desolate, and enlivens the ruins which time and neglect would otherwise render repulsive. It conceals the savage records of feudal times by decorating the castle-walls; occupies the painful void of the mouldering abbey; and weaves a garland on the dilapidated monument, deserted even by grateful memory.

Chelidonium.—Χελιδωνιον, from Χελιδων, the Swallow, probably because the flowers appear about the time that Swallows arrive; or because, according to old authors, it was pointed out as useful for the eyes of Swallows, which are said to open the eyes of their young by it.

Chelidonium majus, Celandine, or Swallow-wort.—The juice of every part of this plant is yellow, and very acrimonious. It is, in fact, quite dissimilar to the sap, properly so called, of plants in general; but being, like animal milk, composed of a watery fluid with oil or resin, must be considered an emulsion, which by evaporation deposits its gum-resin.

Chenopodium.—From Χην, χηνος, a Goose, and πους, a foot; probably alluding to a fancied resemblance of the leaves of certain species to the foot of a Goose.

Chenopodium Bonus-Henricus, Perennial Goose-foot, Good King-Henry, Wild Spinach.—It is very generally cultivated as Spinach about Boston, in Lincolnshire. The young shoots, peeled and boiled, may be eaten as Asparagus, which they resemble in flavour. How the name once idolized in France came to be applied to this vegetable of mean aspect, it may not be easy to trace; but, in the opinion of a French writer, "This humble plant, which grows on our plains without culture, will confer a more lasting duration on the memory of Henri Quatre, than the statue of bronze placed on the Pont-Neuf, though fenced with iron, and guarded by soldiers."

Chenopodium album, White Goosefoot.—A black *Aphis* feeds upon it, and sometimes destroys it. The young herb is reported to be eatable when boiled, and is known by the name of "Fat Hen" in some parts of Norfolk; it is also used as a potherb in Scotland.

Chenopodium maritimum, Small White Glasswort, Sea Goosefoot.—It is an excellent potherb, and the seeds are acceptable to small birds. The alkaline salt with which it abounds renders it serviceable in making glass, though inferior to some kinds of *Salsola*, found in the South of Europe.

Chenopodium olidum, Fetid Goosefoot.—The whole plant is of a dull greyish-green, covered with a greasy mealiness, which, when touched, exhales a strong, permanent, nauseous odour, like stale salt-fish.

Cherleria.—Named in honour of John Henry Cherler, assistant to the celebrated botanist, John Banhin, 1619.

Chlora.—From χλωρος, greenish yellow; alluding to the colour of the blossom.

Chlora perfoliata, Perfoliate Yellow-wort, Yellow Centaury.—The whole plant is of a glaucous colour, and very bitter; it is considered to possess the same medical virtues as *Gentiana* and *Erythræa*. The Rev. G. E. Smith observes, that the central flower expands early in the morning, and closes at noon; the lateral flowers then expand, and continue open until sunset.

Chrysanthemum.—Χρυσανθεμον, from χρυσος gold, and ανθεμος a flower, from the bright-yellow colour of its blossoms.

Chrysanthemum leucanthemum, Great White Ox-eye, Moon Daisy, Maudlin-wort.—The flavour of the whole plant is herbaceous, slightly aromatic, but its properties are not important. Like many other herbs, mixed with Grasses, it forms a part of the hay-crop.

Chrysanthemum segetum, Corn Marigold, Goldins, Yellow Ox-eye.*—However odious to the farmer, especially in his Turnip-fields, this is indisputably a splendid weed, almost as handsome as *Ch. coronarium*. It can only be eradicated by hand, before the seeds ripen. Withering states that it was imported into Sweden along with corn from Jutland, about the end of the sixteenth century, and that in Denmark there is a law to oblige farmers to root it up from their corn-fields.

Chrysocoma.—From χρυσος, gold, and κομη, hair; not inapplicable to the general colour of the flower; but probably applied by Dioscorides to plants of which that circumstance was more obviously characteristic.

Chrysocoma Linosyris, Flax-leaved Goldylocks, German Goldylocks.—This plant is a native of Germany, Switzerland, France, Italy, &c.; it was first discovered as a native of Britain in 1812, by the Rev. Mr. Holbech. In a young state the stem and under surface of the leaves are covered with a soft cottony down, which nearly or quite disappears by the time the plant is in flower. When handled it gives out a faint aromatic smell. It is not a showy plant, yet its bright yellow flowers, which are produced in abundance in a cultivated state, render it not unworthy a place in the flower-garden.

* "Buddle" in Norfolk. In Scotland, "Yellow Gowans," "Quills," "Gools." In Kent, "Yellow Bottle." North of England, "Gowany," "Gules."

CORRESPONDENCE.

Occurrence of the Black Scoter and Crested Grebe near Nottingham.

To the Editor of the Naturalist.

Sir,—The Black Scoter (*Oidemia nigra*, Fleming) has been seen in considerable numbers on the river Trent, near this town, during the last week. I have examined three specimens which were shot at the beginning of the week, from a flock near the Trent Bridge; and I am told that many more were seen a few miles lower down the river. I have never before heard of an instance of this bird being shot in this neighbourhood; and on referring to Colonel Montagu's *Ornithological Dictionary*, I find it stated that "it is *never* observed to visit our rivers or fresh-water lakes." The Crested Grebe (*Podiceps cristatus*, Lath.) has also been killed this week on the Trent, within two miles of Nottingham, and it seems probable that the long-continued cold East winds of the last fortnight may have caused these strangers to visit us. Even in the Winter of 1837–8, when the Smew, Sclavonian and Red-necked Grebes, Goosander, Golden-eye, Black-throated Diver, and other rare water birds, as well as the Peregrine Falcon, were driven here by the weather, not a single specimen of the Black Scoter was seen; so that it is difficult to account for their being found in such large numbers away from their usual haunts at this season.

I am, Sir,
Your obedient servant,
Richard Enfield,
Hon. Sec. of the Nottingham Nat.-Hist. Society.

Nottingham, April 18, 1839.

Geological Map of England.

[We have received the following additional particulars respecting the map recommended in our last No. (p. 449), and need make no apology for inserting the letter of Mr. Nichols, the publisher of the map.—Ed.]

To the Editor of the Naturalist.

Wakefield, April 24, 1839.

Sir,—In reply to your favour of the 19th instant, received yesterday, I beg to state that the price of our *Map of the Inland Navigation, Canals, and Rail-roads of England, Scotland, and Wales*—which is also a geological map, and has received the entire approbation of Mr. Greenhough, one of the Presidents of the

Geological Society—is £4. 14s. 6d., mounted and coloured; and the *Book of Reference*—which is a very important volume—£1. 1s. These works have cost us an outlay of upwards of £20,000, besides labour and anxiety for more than seven years; and I have the gratification of adding, that they have obtained the sanction of most of the eminent scientific gentlemen in London and Edinburgh.

* * * * * * * *

Allow me to remain, Sir,

Your most obedient servant,

Neville Wood, Esq. Richard Nichols.

Description of *Papilio podalirius*.

To the Editor of the Naturalist.

Dear Sir,—I have read with great pleasure the interesting paper in your February number (p. 227) by Mr. Rylands, on *Papilio podalirius*, and I feel assured that every British entomologist will be highly gratified with the able and decisive manner in which he has set at rest the long-disputed point as to whether this splendid Butterfly has ever been found in Britain. Mr. Pigott in a recent number (p. 364) asks for a description of the insect, with a plate, in order that he may discover whether any of his *swallow-tails* are of this species. Being fortunate enough to possess No. 145 of Curtis's *British Entomology*, in which (as you mention) it is figured and described, I will transcribe for the use of Mr. Pigott, and any others who may possess British *swallow-tails*, the whole of folio 578, leaving out the generic details. Mr. Curtis's description is as follows:—

"*Papilio podalirius*, Linn.—Curt. *Guide*, Gen. 763,2.

"Whitish-yellow, superior wings with three broad black bands, the two basal ones continued down the inferior wings, the third with a long black spot on each side at the costa, which is orange, the posterior margin with a very broad black fimbria, divided by an orange stripe towards the apex: inferior wings with a broad black margin, an anal spot of the same colour, bearing a blue lunule, orange with a yellow margin, beneath ochreous; posterior margin with four or five blue lunules, the edges indented with ochreous crescents, lips of tails ochreous.

"*In the Cabinets of Mr. Read and Mr. Dale.*

"Two species of *Papilio* have been taken in England,—

"1. *P. Machaon*, Linn.—Sam. *Comp., pl.* 6, *f.* 1.

"Wings yellow, nervures black, as well as the base and hinder margin, which bears a row of eight yellow spots: inferior with a black fimbria blue in the centre, with seven lunate yellow spots and a red one at the anal one.

"The caterpillar of this species feeds upon Rice, Fennel, Carrot and especially on *Selinum palustre*, upon which I have found it of every size, in July, on the extensive marshes of Norfolk, Cambridgeshire, and Whittlesea-Mere. The Butterfly has been taken from the end of May to the beginning of August at the same places, and also in Dorsetshire. It is very active on the wing, but is easily taken at sunset resting on plants.

"2. *P. podalirius*, Linn.—Curt. *Brit. Ent.*, pl. 578, ♀

"It is with much satisfaction that I commence this volume (XIII.) with a figure of the Scarce Swallow-tail, because it is a great ornament to this work, and will relieve those who have stated that it has been found in Britain, from the imputations that have been cast upon them. For my own part I never could see any reason to doubt Dr. Berkenhout's authority, who describes both species, and adds *P. podalirius* is 'rare in woods;' Mr. Haworth in his *Lep. Brit.* says Dr. Abbot informed him that 'he took in May last (1803) near Chapham Park Wood, in Bedfordshire, a specimen of *Papilio podalirius* in the winged state;' and the Rev. F. W. Hope in a letter to Mr. Dale, dated 1822, says,—'I have captured the long-desired and much-doubted *P. podalirius;* and since then I have seen another on the wing;' and yet in 1828 Mr. Stephens states that as 'no *authentic* instance of its capture is recorded, it seems absurd to consider it any longer as a British species:' He is no less mistaken with regard to its Northern range, for Dr. Bromfield informs me that 'it is very abundant near Berlin, and in Russia up to Moscow; and M. Hoffman assures me that it is found even at Hamburgh.'

"All doubts are now cleared up by the specimen before us, which was taken by W. H. Rudston Read, Esq., when he was at school at Eton College; and to him I am indebted for the loan of the specimen, which is darker than any other I have seen. The following extract is from his letter:—'I captured it myself in my hat near a large nursery garden at Slough, two miles from Windsor, in 1822. The month I cannot tell, but it could not be in August, as then we were always absent on vacation.'"

Mr. Curtis's figure is really exquisite. I would also refer Mr. Pigott to Jardine's *Naturalist's Library*, Entomology, Vol. III., *British Butterflies*, by James Duncan, where figures and descriptions both of *Papilio podalirius* and *P. machaon* will be found.

Should you think that the above will answer Mr. Pigott's purpose, perhaps you will give it a place in the pages of *The Naturalist.*

Believe me to be, Dear Sir,

Sincerely yours,

Law-Park Cottage, near St. Andrews,
April 13, 1839.

Henry Buist.

Three Pupæ in one Cocoon.

To the Editor of the Naturalist.

Dear Sir,—As you state (p. 318) that the more you are "troubled" with queries, and seem to intimate that the less you are bothered with apologies for so troubling you, the better you will be pleased, I have taken it upon myself in the present instance to ask of you, or some of your correspondents, a little information. In 1837 I had two caterpillars of *Acronycta Psi* (the Dagger Moth), which feed upon the leaves of the Pear-tree, and in some seasons are rather abundant. These I kept in a small box, and in due time they enclosed themselves in their cocoons. Next Spring I cut open the cocoons, in order that the Moths I expected might escape without injuring their wings, when to my surprise I found in one of them not *one* but *three* pupæ. Having read in the *Entomological Magazine* of cases which I thought of a similar nature, and whose accuracy had been doubted, I was much pleased with my discovery. On opening the box some time after, I found not three Moths, as I was almost led to expect, but three Flies belonging to the genus *Musca*, and apparently a very common species. Never having, so far as I remember, seen it mentioned that *Diptera* were parasitic on the larva of *Lepidoptera*, and being anxious to know whether it was a common circumstance, I stated the above facts to Mr. P. Rylands, who with the true spirit of a man of science (who always confesses his ignorance when he really knows nothing of the subject), says in a letter to me,—"With respect to parasitic *Diptera*, I never myself met with a case, but friends have, and I have specimens of a *Musca* which I am informed was bred from some Moth. I do not know the species, not having paid much attention to *Diptera*." A case similar to the above occurred during last Summer (with the same caterpillar) to my friend Mr. George Buist, in which, however, the Flies have not yet escaped from the pupa state. Perhaps Mr. Dale, or some other of your entomological correspondents, may be able to give me some information on this point; and by doing so will confer a favour on,

Dear Sir,

Sincerely yours,

Law-Park Cottage, near St. Andrews, Henry Buist.
April 12, 1839.

PROCEEDINGS OF NATURAL-HISTORY SOCIETIES.

EDINBURGH BOTANICAL SOCIETY.

The second annual report of the Edinburgh Botanical Society for 1837—8 represents this Institution in a very flourishing and prosperous state. The Queen has been graciously pleased to become its patron; and "they trust that under her auspices the Society may attain even a greater degree of prosperity than has distinguished its progress hitherto."

The number of Members at the date of the last annual report, amounted to 132. During the period between the 13th of April, 1836, and the 12th of July, 1833, 78 new Members have been enrolled; but, owing to the decease of one Member, the whole number at the latter date was only 199, consisting of six British Honorary Members, 20 Foreign Honorary Members, 75 Resident Fellows, 67 Non-resident Fellows, three Life-Members, 27 Foreign Members, and one Associate.

In consequence of the flourishing state of the Society, and the difficulties which have heretofore been experienced in accomplishing its objects, it has now been resolved, that an Assistant-Curator, with a competent salary, shall be permanently employed; and as part of his duty will be to prepare the specimens for the annual distribution, Members are solicited to transmit their parcels as early as possible, in order to facilitate the work, and prevent the recurrence of any delay beyond the appointed time for despatching parcels to them in return. At the end of the Proceedings is a list of contributors to the herbarium, to whom the thanks of the Society are gratefully returned. The Society are again indebted to the Countess-Dowager of Dalhousie for a valuable addition to her former donations, consisting of the remainder of the East-Indian herbarium presented last year—of plants collected by her ladyship in Canada—and of a collection made at the Cape of Good Hope by Mr. Bowie. The Committee also record, in an equally special manner, a very splendid donation by William Christy, jun., Esq., of London. It comprises nearly the whole of his valuable herbarium, which for several years he has been engaged in forming, with much labour and at great expense. The principal portion of it has already been forwarded to Edinburgh, consisting of about 8,000 species, and upwards of 15,000 specimens, chiefly derived from the collections of the Unio Itineraria, of Drummond, Mathews, Cummings, Schomburgk, Bridge, Wight, Harvey, Shuttleworth, Lippold, &c. Amongst the other Members who have contributed largely to the

Society's herbarium, the following may be noticed :—Dr. Greville, Dr. Balfour, Mr. Brand, Dr. G. M'Nab, Mr. Babington, Mr. James Ward, Mr. Shuttleworth, Mr. Leighton, and Professor Henslow. The Society return their thanks generally to the Foreign Members, for their valuable and useful collections, characterised not only by the excellence of the specimens, but by the admirable manner in which they were preserved. We are glad to find that the Committee, in the proper discharge of their duty, have come to the determination that when a parcel, on inspection, is found to contain specimens not available for the Society's herbarium, or for the purpose of distribution, they will be under the necessity of returning them, or preventing their being reckoned in determining the number of specimens to be sent in exchange. This resolution is adopted in consequence of the imperfect manner in which some of the specimens forwarded to the Society were dried, being totally unfit for examination.

The Committee notice with pleasure the commencement of a correspondence, with the Highland and Agricultural Society of Scotland, the Botanical Society of London, and the gentlemen who superintend the Ordnance Herbarium of Belfast, who, as public bodies, have been placed at the head of the list of those entitled to participate in the distribution. The Committee state, that the Society is ready to enter into correspondence and an arrangement for the interchange of specimens, with any Society or other body engaged in the formation of a public herbarium; and this they intend should be equally available to Societies of established reputation abroad as to those of this country, beyond which it has not as yet extended. The library has received many valuable additions, chiefly by donations. The Committee mention particularly Mr. Christy, as the most extensive contributor; by his liberality the Society has been put in possession of about seventy volumes of scarce or standard botanical works, which were presented along with his herbarium. The proposal for the union of the Botanical Society's herbarium with that belonging to the University has been favourably entertained by the patrons and the senatus, and the arrangements for effecting the desired union have been nearly brought to a close. By these means a cordial co-operation will be established and maintained between the University and the Society, and the efforts of both directed to the formation of one herbarium, as perfect in all its departments as the resources of both can supply. Catalogues of plants found in particular districts, marked in the way recommended by the Society, have been presented by the following gentlemen :—Neighbourhood of Bath, by R. C. Alexander, M.D.; neighbourhood of Chippenham, Wilts, by R. C. Alexander, M.D., and Mr. C. E. Broome; Worcestershire, by Mr. Edwin Lees; within fifteen miles of Aberdeen, by Mr. George Dickie. The report states that in connection with this subject, Mr. Brand has for some time been engaged in

maturing a plan for the arrangement of the Society's British herbarium, which is chiefly based upon the principle of affording a correct view of the geographical distribution of each species throughout Great Britain and Ireland, including the adjacent islands. For this purpose, he proposes to divide the country into forty-two districts, embracing one or more counties, grouped according to a union of their political and natural boundaries, as delineated on a map laid before the Society, instead of employing the divisions of the counties themselves, which would extend to upwards of 120, and render an herbarium so arranged one of unnecessary magnitude. The first edition of the Society's *Catalogue of British Plants*, amounting to about 4,500 copies, having been now nearly disposed of, a second edition will probably soon be published, containing the new species and varieties recently added to the Flora, with such improvements as may be suggested. The preference given to the octavo sheet will probably cause that form to be adopted, rather than the larger sheet now chiefly in use. Mr. W. A. Leighton, of Shrewsbury, one of the Fellows of the Society, has agreed to publish a second edition of his excellent *Catalogue of the Cellulares or Flowerless Plants of Great Britain*, uniform in size with the Society's Catalogue, and intended for the use of its Members. It will be published under the immediate superintendence of Mr. Leighton, who will embody whatever corrections may be pointed out to him; and it will be marked on the title-page as "Printed for the Botanical Society of Edinburgh," which it is hoped will lead to its adoption by Members, as the best medium for the transmission of lists of their desiderata, as well as for general use. The Committee, on behalf of the Society, return their thanks to the various Local Secretaries, who have, by their valuable services, contributed so much to the advancement of the Society. The Committee notice with regret, the loss which the Society has sustained by the death of Dr. Alexander Murray, author of the *Northern Flora*, their late excellent Local Secretary at Aberdeen.

MEDICO-BOTANICAL SOCIETY.

April 24.—Earl Stanhope, Pres., in the chair.—The first paper read was a communication addressed to the noble chairman by Dr. Hancock, "On the Effects of the Alconorco," a Leguminous shrub bearing papilionaceous purple flowers, and growing in the savannahs of the Orinoko to a height of six or eight feet, and which is much esteemed as a remedy in phthisis. The plant was introduced from the Orinoko and Venezuela into Jamaica and other islands, and appears to have found its way some years ago.—The next communication was a paper by the Secretary, Mr. Jubb, on the baneful effects produced by the Cuichunculli, in a case of rheumatic gout which had recently come under his observation.—Dr.

Sigmond next delivered a lecture on the natural order *Euphorbiaceæ*, particularly with respect to the croton oil, the remainder of which was deferred to the next meeting.

HULL ZOOLOGICAL SOCIETY.

A prospectus has been issued of a Zoological Society, which, through the laudable and persevering exertions of Dr. Alderson, is about to be established in Hull. It is intended to be opened to shareholders, and subscribers of a small annual payment.

ST. ANDREWS SCIENTIFIC AND LITERARY ASSOCIATION.

At the monthly meeting, Feb. 4, Lord William Douglas, Pres., in the chair, the following papers were read:—1. "On the simultaneous Flow of the Rivers Nith, Clyde, and Teviot," by Sir David Brewster; 2. "On the New-Red-Sandstone Formation prevailing along the Coast of Fife from Wemyss Castle Eastward to Largo," by Mr. D. Page; 3. "On the Discoveries relating to Cilia," by Mr. Goodsir, read at the request of Sir D. Brewster, and illustrated by diagrams; 4. "On a new Fossil Fish, allied to *Amblypterus*, and discovered on the estate of the Rev. E. S. Lumsdaine, at Innergellie," by Mr. Goodsir.

Several donations were announced; and Dr. John Baron, and other gentlemen, were elected Honorary Members.

EXTRACTS FROM FOREIGN PUBLICATIONS.

ZOOLOGY.

1. Nerves of Sensation and Motion.—M M. Poiseuille and Laurillard have made a report on this subject which leaves the matter *in statu quo*. It is agreed on all hands that Majendie's experiments on the nerves of the spine are not to be relied on. M. Poiseuille, however, thinks that if the experiment be properly performed, the results are as heretofore stated. We do not go into details, because the subject comes on for discussion in the Academy of Medicine presently, of which all the unfortunate Dogs of Paris should have early notice.

BOTANY.

2. Vegetable Heat.—MM. Van Beek and Bergsma have made some experiments on the temperature of the flowers of *Colocasia odora* with the thermo-

electrical needles of MM. Becquerel and Breschet. On the 5th of September, 1838, the spadix had acquired the enormous temperature of 43 degrees (centig.), the air being 21 degrees, making a difference of 22 degrees. The disengagement of that heat took place on all the visible surface of the spadix, although differing in intensity in different parts. After the unfolding of the spathe, there was a considerable disengagement of heat in the male flowers, which acquired a very high temperature, much greater than what appeared at the same time in the other superior parts of the spadix. Towards the period of the emission of the pollen, a considerable augmentation of heat was manifest in the male abortive flowers which form the fleshy or glandular cone of the spadix.

GEOLOGY.

3. Fossil *Carnivora*.—M. Lartet announced the transmission of a large quantity of fossil bones from the tertiary formations of Gers. He considers that two new Carnivorous animals have been discovered among them, one a genus or sub-genus intermediate between the Otter and Badger, the other approaching the Dog. He says that among the fossil mammalia discovered in the vicinity of the Rhine, a number of species appear to be identical with those daily found at the foot of the Pyrenees, while the intermediate country, Auvergne, for example, had a very different population. Possibly hereafter the geographical circumstances which caused this, may be ascertained.—*L'Institut.*

REVIEWS OF NEW PUBLICATIONS.

The Fruit, Flower, and Kitchen Garden; being the Article "Horticulture" of the Seventh Edition of the *Encyclopædia Britannica*. By Patrick Neill, LL.D., F.R.S.E., Secretary to the Caledonian Horticultural Society. Edinburgh: *A. & C. Black*. 1838. Sm. 8vo. pp. 336.

In this volume we find another member of that admirable series of scientific treatises in course of republication from the *Encyclopædia Britannica*. The mere fact of its appearance in that great national work would be a powerful recommendation to the public; and this circumstance, coupled with the name of Dr. Neill, will be considered an ample guarantee of excellency by even the most cautious book-purchaser.

That such a book affords little further scope for literary display than as a judicious compilation, may readily be conceived by those acquainted with the

nature of the undertaking; but surely no one will venture to assert that the production of a really good compilation is either an easy matter or of little value. We allude not to a scissors-and-paste affair, but to a work which would require as much labour, skill, and reflection, perhaps, as an original treatise. It is in this capacity that the meed of praise must be conceded to Dr. NEILL, for the able and judicious *compilation* emanating from his pen. What avails it to assert that the major part of the matter introduced into his volume has been published elsewhere? since it required the mind of a skilful and experienced horticulturalist to condense, enlarge, expunge, amend, and explain. In publications similar to "woorthy" old GERARDE'S *Herbal*, there lies much valuable information; but where is the beginner, the learner, who can be expected to cull the good alone, and reject the worthless? In Dr. NEILL'S treatise, and works of a similar kind, the student will find friends good and true—saving an infinity of useless labour, and well repaying an intimate acquaintanceship.

Dr. NEILL sets out by admitting that, without calling in question the undoubted advantage to gardeners of a knowledge of Botany, Chemistry, Meteorology, and other sciences, Horticulture has hitherto been most successfully practised as an empirical art, few of those who are minutely conversant with its numerous manipulations having undergone such an intellectual training as to enable them to wield general principles with effect. Many who succeed passably so long as they pursue the routine practice, egregiously fail when they attempt to strike out new paths for themselves. To the great mass of gardeners in the present day, accordingly, it must be recommended that they do as their forefathers did. At the same time it must be obvious that the necessity for this advice arises, not out of the little benefit derivable from Chemistry to Horticulture under any circumstances, but either on account of the injudicious application of the two studies made by writers in general or practitioners in particular, or else from the imperfect state of the science of Horticulture. Therefore while the young gardener is ensuring safety by following a plan sanctioned of old, let him store up a general knowledge which will be available to himself in riper years, and to his immediate posterity when he shall have departed to his "long account." The utility of such a course will not be called in question at the present day; for it has at length been discovered that knowledge of every kind is useful to all classes of the human race. The thirst for knowledge almost universally displayed of late years by the gardening fraternity is truly gratifying, not only to the well-wisher of Horticulture, but likewise to the man whose philanthropy knows no bounds either of climate, colour, or rank. If some of the periodicals supported by gardeners be not of the highest character, that can only be considered a necessary consequence of a *first* craving for information. Quacks will speculate upon this as on every other craving, and may for a time appear to damage the cause

they seem to advocate. But any books are better than no books at all; and in course of time the taste for the trashy publications will be for ever annihilated. It gives us pleasure to know, in the mean time, that periodicals and standard works of real value, not only on Horticulture, but also on Entomology, Ornithology, Botany, Chemistry, &c. &c., as well as on Natural History generally, are regularly purchased by the more intelligent gardeners of Britain—some, too, bearing a price which would at first sight appear prohibitory.

It will be obvious that it were impossible, in our author's limited space, to describe *all*, or even *one half* of the methods of culture employed at the present time. A selection, therefore, became necessary, and he has imparted those alone which are deemed to be the best. On such matters, of course, there will be much diversity of opinion, and experience is undoubtedly at all times the best preceptor; but if the young practitioner be inclined to rely on any opinion, he will in general have little cause to regret having adopted that of Dr. Neill. The author has confined his attention in the present volume to British Horticulture, and has endeavoured to give such an exhibition of its practice as may suit the middle districts of the island.

All circumstances being favourable, says Dr. Neill, a British garden is perhaps unrivalled in fertility by any cultivated spot in the world. A copious supply of esculent vegetables flows into the kitchen at all seasons; and after a rich abundance of fruit has been afforded during Summer and Autumn, the Winter stores may be easily prolonged till the early forced fruits come again to the table. Dr. Neill, however, expresses just surprise that, seeing the value of walls in kitchen gardens, they have not in England been multiplied by the erection of slight and cheap structures, such as are common in the Peach-gardens in France. No doubt this would effect a material increase in the produce of our gardens, at a trifling expense, and hence wall fruit would become both cheaper and more abundant.

It is stated (p. 13) that "bricks afford the best and most kindly material for garden-walls." In the next page, however, we learn that "different parts of the principal fruit-wall of the Horticultural Society's Garden, at Edinburgh, are built of brick, of Freestone [*i. e.*, Sandstone capable of being easily dressed], and of Greenstone; and the plants trained against the Greenstone portion have evinced, by their growth and earlier maturity, that they enjoy a superior temperature."

The author recommends that a considerable portion of the walls of every good garden, especially in the North, should be constructed with flues to supply the means of applying artificial heat. The expense of this is trifling; and in cold seasons and cold situations, the aid of this species of wall is nearly indispensable for the regular ripening of grapes, peaches, apricots, and figs, as exemplified at

Erskine House, on the Clyde, where, with the assistance of a little fire-heat, large and highly-flavoured black Hamburgh grapes are produced, and where mayduke cherries have been ripened at least six weeks before the usual period.

The facts and suggestions, original and selected, which crowd Dr. NEILL's pages, will be of the utmost value; while the subject is treated in so engaging a manner, and so illustrated with woodcuts, that the treatise must become a favourite among all classes of readers.

An Elementary Dictionary or Cyclopædia for the Use of Maltsters, Brewers, Distillers, Rectifiers, Vinegar-Manufacturers, and Others. By GEORGE ADOLPHUS WIGNEY, Brewer, Brighton, Sussex. Brighton: *R. Sicklemore; P. Richardson*, London. 1838. 8vo. pp. 365.

WE congratulate the brewers of Britain on the possession of this text-book, from the pen of the sensible and experienced Mr. WIGNEY, of Brighton. Some of his subscribers may be disposed to blame him for having executed his task in so comprehensive a manner; for here may be found a few words on almost "every topic under the sun," though they are for the most part brought to bear in some manner on the main subject of the work. But the account given by the author of the difficulties experienced by himself at the outset of his career as a brewer, some twenty years since, will convince those in similar circumstances that such knowledge as that imparted by Mr. WIGNEY is absolutely indispensable to ensure complete success. The mere plain recipe for manufacturing ale and porter may, indeed, be learned from penny tracts; but although an illiterate routine brewer may succeed tolerably well in his own particular craft, he will not be prepared to introduce those improvements into his practice that even a slight knowledge of other subjects would enable any acute observer easily to do. It were, moreover, difficult satisfactorily to explain why a man must necessarily be exceedingly ignorant and unenlightened in order to succeed in any single branch of business. No doubt there are advantages in his applying his chief attention to the attainment of some one object; but he will not be the less able so to concentre his mind because he brings the light of collateral branches of knowledge to his assistance.

We wish to see brewers become philosophers as well as any other class of men; and to all who are thus inclined, the present interesting and instructive volume may safely be recommended.

Elements of Zoology; embracing a View of Life as manifested in the various Gradations of organized Beings. By WILLIAM RHIND, M.R.C.S., &c. &c.

Edinburgh: *Fraser and Crawford; Smith, Elder, and Co.*, London. 1838. 12mo. pp. 119.

This is a continuation of a series of elementary treatises by the same author, and is well calculated to initiate the student into the "first lines" of Zoology. It includes brief notices of the habits, structure, &c., of the various classes of animals, the classification adopted being, with a few exceptions, that of Cuvier. We have every reason to be well pleased when we find the elements of a science imparted by a really well-informed man; and must concede all due praise to Mr. Rhind in this respect; but surely the illustrative wood-cuts are quite unworthy to appear in such a work. Let us hope to see this defect removed in a future edition.

The Author's Printing and Publishing Assistant; comprising Explanations of the Process of Printing, Preparation and Calculation of Manuscripts, Choice of Paper, Type, Binding, Illustrations, Publishing, Advertising, &c. With an Exemplification and Description of the Typographical Marks used in the Correction of the Press. London: *Saunders and Otley.* 1839. 12mo. pp. 61.

There are probably among the readers of *The Naturalist* many embryo authors to whom a work on the plan of the above would prove useful. To these the volume published by Messrs. Saunders and Otley will, as far as it goes, be found an assistance. It must, however, be regretted that the subject has not been more comprehensively, as well as more minutely, discussed. For instance, with regard to advertising, the book merely states that, "as an essential part of publication, it should never be lost sight of; but it is a measure which should be judiciously regulated and cautiously pursued; or a large amount of expense may be incurred to very little purpose." No doubt. But who could not have told Messrs. Saunders and Otley as much? We are well aware that further remarks on this point from a publisher might lead to unpleasant consequences; but we think the object could easily have been effected without the charge of invidiousness, by imparting general rules rather than alluding to particular advertising media. The same observations will apply to other departments of the book, which, however, may be purchased in absence of one still more explicit and complete.

A Pictorial Catalogue of New Works on Natural History; and Illustrated Popular Books. Published by John Van Voorst, 1, Paternoster-Row, London. London: Printed by *Samuel Bentley.* 8vo. gilt edges. 1839.

This publication contains a specimen of the woodcuts of several valuable works published by Mr. Van Voorst, with a statement of the nature, objects, and extent of each work; and although intended as a prospectus, and gratuitously distributed as such, it is certainly a very beautiful production.

We may here take the opportunity of observing, that there is not a publisher in London more deserving the praise of naturalists than Mr. Van Voorst, for the valuable and truly useful works announced by him in rapid succession.

A practical Treatise on the Culture of the Melon. By John Duncan, Gardener to Thomas Daniel, Esq., President of the Horticultural Society of Bristol, 1839. London: *Adams and Co.; Strong and Chilcott*, Bristol. 1839. 8vo. pp. 110.

The melon is an exceedingly delicious fruit when properly raised; but its culture appears to be but little understood by routine gardeners in England. We are therefore glad to find Mr. Duncan endeavouring to enlighten his brethren on this subject, in a well-written and altogether very able treatise, displaying a highly creditable knowledge of the point under discussion. It is to be hoped that the intelligent author will receive due support from melon-growers, who will here find much interesting matter, well digested.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Birds in the Neighbourhood of Godalming.—There is a great dearth of our Winter birds of passage in this district. With the exception of an occasional passing flock of Geese, I have scarcely noticed any other species. The Hooded Crow is quite unknown here, and the Golden Plover is rarely met with. I have seen a beautiful male Hawfinch which was shot the other day in this county; and I should not be surprised if this species breed in some of our woods where Holly is abundant. I shall keep a good look-out in Spring.—J. D. Salmon, *Godalming, Surrey, Feb.* 19, 1839.

On the Species of Ptarmigan.—A pair of the Ptarmigan noticed by Mr. Johnson (p. 390) have been presented to the Natural-History Society of this town. The male appears to me to be distinguished by the red over the eye. The species is probably distinct from that described by Selby, but I am unable to speak at all positively.—Peter Rylands, *Bewsey House, Warrington, April* 9, 1839, *in a letter to the Editor.*

Stylops Spencii, Pick.—This insect is figured on plate 17 of the *Transactions of the Entomological Society*. The specimen was bred on *Christmas-Day!* I long suspected that there were numerous species which bred under ground early in the season, from finding some with exuviæ very early in the Spring. Mr. Westwood has made some remarks on the genus which have a tendency to confirm Mr. Curtis's statement.—J. C. Dale, *Glanville's-Wootton, Dorsetshire, July* 9, 1837.

Figures of British Efts.—We this month publish three beautiful figures of British Efts, engraved by Branston from drawings by Mr. Blyth. We regret that the latter gentleman has been unable to find time to write the paper intended to accompany them, in time to appear simultaneously with the illustrations. Descriptions of these creatures will be found in Jenyns's *Manual of British Vertebrated Animals*, and other works.—Ed.

Song of the Common Crossbill.—If your *British Song Birds* were now going to press, instead of being in print, bound, gilt, and lettered, I could give you *a stave* as to the *song* of this curious bird. Since January I have had in my possession a pair of Crossbills (*Crucirostra vulgaris*, Steph.), which I purchased from a bird-preserver, who received them from the vicinity of Bristol, where I understand they were very numerous last Autumn, as well as in the Fir-plantations near Gloucester. I have fed them exclusively on Hemp- and Canary-seed, and Fir-cones, of the latter of which my shrubbery furnishes them with a famous daily supply. It is a most pleasing sight to behold them manipulating on a cone, holding it firmly by the claws on their perch, while their cross bills snap up the scales with greater rapidity and facility than a pair of scissors would do. The male is a fine, bold, fearless fellow, but the female still remains shy. To-day for the first time, having hung them out in the garden, I was surprised to catch them in a sprightly duet; the female loudly iterating *hip, hip, hip—hip, hip, hip*, continuously, while the male in a far shriller key responded *peep, peep, peep—peep, peep, peep*, both opening their bills very wide, which gave them rather a grotesque aspect.—Edwin Lees, *Forthampton, Gloucestershire, April* 30, 1839.

The last surviving Daughter of the great Swedish Naturalist.—Louisa, the last surviving daughter of Linnæus, died at Upsala on the 21st of March, 1839, at the advanced age of ninety. She has left some fortune, which goes to the two great-grand-children of Linnæus, Widow Martin and Mrs. Ridderbjelke.

Estimated Number of Sheep in Britain.—The estimated number of Sheep in Great Britain and Ireland is 32,000,000.

Description of Natural Scenery.—The following sketch appears to be penned in the true spirit of a lover of Nature, and is extracted from the *Life and Adventures of John Rumshaw*:—

The Vale of Milton is one of the loveliest spots in the beautiful county of P—. Bounded on the West by a lofty range of verdant hills, and on every other side by gentle acclivities, surmounted by the most delightful groves, in whose still shade the Nightingale loves to pour forth his dulcet strains into the bosom of those beautiful moon-lit nights so frequent and refreshing in the month of June, there, if nowhere else, flourish the Oak, the Beech, the Larch, the Sycamore, and a dozen other native trees, untouched by the meddling hand of Man, and secure from the yet more withering influence of the rude North wind of our bleak climate. There the Blackcap and other sylvan choristers chaunt their "wood-notes wild" in sweet rivalry, without fear of being molested by their implacable enemies the pseudo-sportsman and the bird's-nester. There grow, in unexampled number and brilliancy, many of Flora's brightest gems. In the woods are formed gardens far surpassing in beauty the conventional things thus ycleped by the lords of the creation. Yes! for though Nature may call to her aid such humble and despised beauties as the Primrose, the Cowslip, the Daisy, and even the Nettle and other coarser herbage, yet such is the well-rendered care bestowed on their arrangement, that, to the cultivated and refined mind, the scene forms one of the most beautiful pictures that can be imagined.

The Vale, though not extensive, includes almost every variety that the heart of Man can desire. If the gorgeous flowers and highly-prized fruit-trees of warmer climes be absent, not the less worthy of admiration are the lovely vegetable beauties which do adorn the landscape. Again: let the lover of the bold and romantic despise these homely charms, and, standing in the midst of our modern Garden of Eden, turn his eyes Westward. There let him feast his mind on the noble peaks and awful precipices forming the Occidental boundary to the peaceful valley below. Surveying the latter from the summit of Peak Randall, dull indeed must be the man who fails to notice and admire the varied character of the River Wanton, now flowing calmly through the fertile mead, now ambling over the smooth pebbles, and ever and anon lost amid rich groves and clusters of shrubs. On the slopes above the water graze Sheep, Cows, and Horses, with legions of Geese; and on the peak itself ample scope and verge enough are allowed for the restless nature of the Wild Goat.

On the brow of the peak stands, and has stood for ages, the noble castellated structure entitled Mainwaring Abbey, rearing its lofty pinnacles amid the dense mass of foliage with which it is surrounded. In this wild yet lovely valley no stiff park-wall is needed to prevent the idler, of either sex and all ages, from intruding on its still solitude. Here the perfection of unalloyed Nature may be enjoyed to the utmost. Here the sound of the gun is never heard; and, consequently, while "game" suffers no diminution, all the rarer and more prized species of the feathered tribes abound. The Jackdaw and the Starling nestle in

some cosy hole at the summit of the Abbey, the Ring Dove coos and murmurs in the shady grove, and each sweet warbler joins in the flood of harmony in the Vale. Here alone in the county are found those splendid but persecuted birds the Ravens; and the river is ever alive with water fowl of varied voice and plumage. The whole scene is, in short, a "a paradise on earth;" and should any man be so smitten on a perusal of ZIMMERMANN *On Solitude* as to desire to pass the rest of his days as a hermit, this, unquestionably, is the place for him.

BOTANY.

CELEBRATED OAKS.—The oldest Oak in England is supposed to be the Parliament Oak (so called from the tradition of EDWARD I. holding a Parliament under its branches), in Clipstone Park, belonging to the Duke of PORTLAND; the park being also the most ancient in the island; it was a park before the Conquest, and was seized as such by the Conqueror. The tree is supposed to be 1,500 years old. The tallest Oak in England *was* the property of the same nobleman, and was called *the Duke's walking-stick;* was higher than Westminster Abbey; and stood till of late years. The largest Oak in England is the Calthorpe Oak, Yorkshire. It measures 78 feet in circumference where the trunk meets the ground. The *three-shire Oak*, at Worksop, was so called from covering parts of the counties of York, Nottingham, and Derby. It had the greatest expanse of any recorded in this island, dropping over 779 square yards. The most productive Oak was that of Gelonos, in Monmouthshire, felled in 1810. The bark brought £200, and its timber £670. In the mansion of Tredegar Park, Monmouthshire, there is said to be a room 42 feet long and 27 broad, the floor and wainscot of which were the produce of a single tree grown on the estate.

AN AUDIENCE OF BEANS.—Baked beans, it is said, are a common dish at a Sunday dinner. A clergyman has computed that he "has preached regularly every Sabbath afternoon to fifty-five bushels and three pecks of baked beans, while their owners were mostly asleep."—*New-York paper.*

GEOLOGY.

BLASTING ROCKS BY GALVANISM.—A new mode of blasting rocks, viz., by the aid of galvanism, was lately tried by the inventor, Mr. MARTIN ROBERTS, at Craigleith Quarry, near Edinburgh, and answered admirably. An account of the trial appeared in *The Scotsman*, and other Edinburgh papers.

DR. PYE SMITH'S LECTURES ON GEOLOGY.—DR. PYE SMITH has recently undertaken the difficult task of reconciling Scripture and science, in a course of lectures on Geology and Revelation, in London. Of these lectures it has been said that "they presented a scene of gratified irreverence seldom, perhaps, surpassed by any assembly of Infidels congregated for the express purpose of enjoying an

ingenious scoff at the records of the inspired volume." "Surely," exclaims another writer, "it cannot be long ere the Infidel and the Evangelist shall be a syonym of term, and an identity of person." Now we have neither heard nor read these lectures, but we believe that Dr. SMITH's aim is to prove the entire accordance of Geology and Scripture. If so, he has received but small thanks for his pains from the would-be pious—and the reason is obvious. Truly at the present day the man of science, the philosopher, can afford to laugh—or "scoff," if you will—at the hypocritical endeavour to cast the taunt of "Infidelity" in the teeth of an opponent. A man is an Infidel in one country who would be Orthodox in another; and the term can only be considered a reproach by those who believe solely because there is no reason for their faith. Who would not be an "Infidel" where Orthodoxy is but another name for Superstition?—ED.

USE OF GEOLOGY TO FARMERS.—One of the most obvious sources of advantage to the farmer, from an acquaintance with the distribution of mineral masses, is the facility with which in many instances the injurious effect of small springs coming to the surface may be obviated. The theory of the earth's internal drainage is so simple, that every man of common sense would be able to drain his land upon sure principles, or else to know precisely why it cannot be drained, if he were to become so much of a geologist as to learn what rocks existed under his land, at what depth, and in what positions. Springs never issue from stratified masses, except from reservoirs somehow produced in jointed rocks—and at the level of the overflow of these subterranean cavities. Faults in the strata very frequently limit these reservoirs, and determine the points of efflux of the water. Let those faults be ascertained, or the edge of the jointed rock be found, the cure of the evil is immediate. But some geological information is needed here; and landed proprietors, who think it less troublesome to employ an agent than to direct such a simple operation, may at least profit by this hint, and choose an agent who knows something of the rocks he is to drain. Another thing, probably of importance to agriculturists, is the discovery of substances at small depths, which, if brought to the surface, would enrich, by a suitable mixture, the soil of their fields. This is very strongly insisted on by Sir H. DAVY, in his essays; and, considering how easy a thing it is for a landowner to ascertain positively the series of strata in his estate, it is somewhat marvellous that so few cases can be quoted, except that of Sir JOHN JOHNSTONE, Bart., of Hackness, near Scarborough, in which this easy work has been performed. Finally, in the experiments for the introduction of new systems and modes of management, with respect to cattle and crops, it will be of great consequence to take notice of the qualities of the soil, sub-strata and water, for these undoubtedly exercise a real and perhaps decisive influence over the result.

SELECTED POETRY.

THE KING OF THE SEA.

Oh, the Whale is free of the boundless sea,
He lives for a thousand years;
He sinks to rest in the billows' breast,
Nor the roughest tempest fears.
The howling blast, as it hurries past,
Is music to lull him to sleep;
And he scatters the spray in his boisterous play,
As he dashes—the king of the deep.
Oh, the rare old Whale, 'mid storm and gale,
In his ocean home will be
A giant in might, where might is right,
And king of the boundless sea.

A wond'rous tale could the rare old Whale
Of the mighty deep disclose,
Of the skeleton forms of by-gone storms,
And of treasures that no one knows.
He has seen the crew, when the tempest blew
Drop down from the slipp'ry deck,
Shaking the tide from his glassy side,
And sporting with ocean and wreck.
Then the rare old Whale, &c.

Then the Whale shall still be dear to me,
When the midnight lamp burns dim;
For the student's book and his fav'rite nook,
Are illumed by the aid of him;
From none of his tribe could we e'er imbibe,
So useful, so bless'd a thing,
Then we'll on land go hand in hand,
To hail him the Ocean King.
Oh, the rare old Whale, &c.

J. E. C.

BIOGRAPHICAL NOTICE OF THE LATE DR. LATHAM.

The *Gentleman's Magazine* for July, 1837, contains a brief memoir of Dr. Latham, the principal facts being extracted, though without acknowledgment, from *The Naturalist*, Vol. II., p. 56. It includes, however, the following additional particulars, which will doubtless be interesting to our readers :—

In the correspondence of the Rev. Samuel Denne, the Kentish antiquary, and Vicar of Wilmington, near Dartford, which is printed in the sixth volume of Nichols's *Illustrations of the Literary History of the Eighteenth Century*, the name of Mr. Latham frequently occurs; and at last his departure from Dartford is thus noticed under the date of the 3rd of May, 1796 :—"By the removal of Mr. Latham from Dartford to Romsey, this vicinity has lost an experienced practitioner in the medical, chirurgical, and clinical line; and I am deprived of the conversation and assistance of a brother F.S.A. His departure is the more to be regretted, because he had upon his shelves many books of the antiquarian class to which I had free access; and he could likewise make good use of his pencil, and was always ready to employ it. The settling of his son in Romsey, and his marrying his daughter to a surgeon and apothecary in Winchester, were what determined him to transmigrate to the county of Hants; and as he has taken so long a flight, and is past the age of youth and activity, it is not probable that his visits into Kent will be frequent. An apology is requisite for styling him only Mr., he being a Dr. by diploma from Acad. Cæs., and enrolled M.D. in the lists of the Royal and Antiquarian Societies of London."

Mr. Latham was elected a Fellow of the Society of Antiquaries on the 15th of Dec., 1774; and of the Royal Society on the 25th of May, 1775. He had been the senior member of the former body since the death of the late venerable historian of Surrey, William Bray, Esquire, Dec. 23, 1833; and of the Royal Society for a longer period, since the death of Joseph Planta, Esq., Keeper of the British Museum, Dec. 3, 1827.* In 1788, he was one of the original members, or founders, of the Linnæan Society.

Dr. Latham first appeared as an author in 1770, in the *Philosophical Transactions*, and afterwards published the following works :—*A General Synopsis of Birds*, in six volumes, 4to., with two supplementary volumes, 1781—1801;

* Sir Abraham Hume is now the father of the Royal Society, elected Dec. 14, 1775; and Sir John English Dolben, Bart., of the Society of Antiquaries, elected April 6, 1780.

Index Ornithologicus, sive Systema Ornithologiæ, complectens Avium Divisionem in Classes, Ordines, Genera, Species, ipsarumque Varietates, &c., 2 vols., 4to. 1790; *A Plan of a Charitable Institution intended to be established upon the Sea-Coast*, for the Accommodation of Persons afflicted with such Diseases as are usually relieved by Sea Bathing, 8vo., 1792; *Oratio Anniversaria in Theatro Coll. Reg. Med. Lond. ex Harveii Instituta, habita Oct.* 18, 1794, 8vo.; *A Letter addressed to Sir George Baker, Bart., on Rheumatism and Gout*, 8vo., 1796; *Heald's Pharmacopœia of the Royal College of Physicians Revised*, and adapted to the last improved Edition of the College, 8vo., 1805; *Facts and Opinions concerning Diabetes*, 8vo., 1811. Also several treatises on medical subjects and on Natural History, which appeared at various times in the *Philosophical Transactions*, the *Transactions of the Linnæan Society*, and the *Medical Transactions*.

Though chiefly known, and most successful as a naturalist, Dr. LATHAM was also much attached to antiquities. In a letter to Mr. DENNE, written in 1797, he remarked,—"In respect to Natural History and antiquities, I compare myself to GARRICK, between Tragedy and Comedy; and, though not so great a man, I cannot help, like him, squinting towards that which pleases me best." In 1831, he communicated to the Society of Antiquaries an account of some ancient sculptures and inscriptions in the abbey church at Romsey printed, (with a plate, and accompanied by some remarks of Sir H. C. ENGLEFIELD) in the *Archæologia*, Vol. XIV.; in 1804, an account of an engraved brass plate from Netley Abbey, published, with a plate, in the *Archæologia*, Vol. XV.

Very recently, we remember his making a communication to the Society of Antiquaries, we think relating to the seal of Romsey. He was also an occasional correspondent of the *Gentleman's Magazine* on antiquarian subjects; and we may particularly refer to a communication respecting a painted altar-piece found in Romsey church, on which an article in the old series was founded.

Dr. LATHAM was twice married. His second lady, to whom he was united in 1798, was Miss DELAMOTT, of Ealing.

END OF THE FOURTH VOLUME.

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